The Croonian Lectures

ON

THE DEGENERATION OF THE NEURONE.

Delivered before the Royal College of Physicians of London

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LECTURE I.[1]

Delivered on June 19th, 1900.

MR. PRESIDENT AND GENTLEMEN,—Allow me to thank you for the great honour you have done me in asking me to give these lectures. I feel the responsibility all the more in lecturing upon the subject I have chosen, when I look back upon the eminent neurologists who have given these lectures on previous occasions. I cannot hope to attain to the philosophy of Hughlings Jackson or the epoch-making researches of Ferrier, but I will endeavour to put before you some thoughts, experiments, and observations relating to degeneration of the nervous system which have occupied my attention during the past three or four years.

DEFINITION OF THE NEURONE AND THE NEURONE THEORY.

Before considering the neurone under pathological conditions it is necessary to define the term, to make a few general remarks upon the neurone theory, and to describe our present knowledge of the structure of the neurone. The term "neurone" was introduced by Waldeyer for the nerve-cell and all its processes, including the protoplasmic processes or dendrons and the single axis-cylinder process with its cone of origin, its collaterals or side branches, and its terminal arborisation. The theory of the neurone put forward by Waldeyer[2] is that the nervous system consists of innumerable such anatomically independent nervous units in contiguity but not in continuity. There is interlacing of the processes, but no nerve network.

THE NETWORK OF GERLACH.

In 1871 Gerlach,[3] by the gold method of staining, showed an intricate network in the grey matter; he came to the conclusion that the protoplasmic processes of the nerve-cells were all connected in a delicate network, and that out of this network strands of fibrils joined together to form fibres which passed out of the posterior roots and became sensory nerve-fibres. For 15 years this theory was accepted; then Forel[4] and His,[5] by their studies respectively of degeneration and of the development of the nervous system in the embryo, completely overthrew the doctrine of Gerlach. Forel pointed out the limitation of secondary degeneration; and by the Gudden atrophy method showed that degeneration or atrophy did not pass beyond a cell station when the fibres which arise from those cells are cut through; and he claimed that the nervous system consisted of independent cellular units. Forel also called attention to the remarkable work of Golgi,[6] and although he opposed the diffuse nerve network theory put forward by that authority yet he recognised the great value of the researches made by his new chrome silver method. About this time Professor His published his researches upon the development of the nervous system, and he showed that the axis cylinder and the other processes of the nerve-cell were outgrowths of the cell protoplasm, and the apparent nervous network was really only an interlacing of innumerable cell processes.

The chrome silver method of Golgi was later adopted by Ramon y Cajal,[7] Retzius,[8] Kölliker,[9] Lenhossek,[10] Van Gehuchten,[11] and many others, and their researches *apparently* demonstrated the fact that the whole nervous system consists essentially of independent anatomical units, and the neurone theory seemed indisputably established. No matter how multitudinous and complex the branches of the cell might appear yet they never anastomosed with the branches of other cells; like the trees of a forest there is contiguity but not continuity. Within the last few years, however, owing to the researches of Apáthy,[12] Bethe,[13] Dogiel,[14] and Nissl,[15] there is a tendency on the part of some authorities to go back to a diffuse network theory. Some important researches by Held,[16] also have been put forward to disprove the neurone theory. In my opinion, however, one can still accept the neurone theory and admit the truth of Held's observations, namely, that the terminal arborisation of the axis-cylinder process of one neurone forms protoplasmic concrescences by fusion with the cell body and dendrons of another. This of course implies continuity of the protoplasm of one neurone with another, but trophically and genetically the two are independent, and it is merely a question of degree of contact of the protoplasm of one with the other. Held agrees with other investigators that in embryonic tissues, and even in early life, the neurones are entirely independent of one another. This independence he can determine by a line of demarcation at the points of contact due to a difference in refraction. This refractive limiting line is, however, not demonstrable in the adult, and he comes to the conclusion that during the process of growth the protoplasm of related neurones fuses. Turner and Hunter[17] by the *intra vitam* methylene blue method, however, come to a different conclusion to that of Held, for they have shown that the terminal arborisations of the axons of one set of neurones end in a basket work around the cells of functionally related neurones, but do not form protoplasmic connexions.

The neurone theory has always been opposed by Golgi, who maintained that his method demonstrates a diffuse network formed by the collaterals of the axons; but it is especially the work of Apáthy and Bethe which has led authorities such as Nissl to renounce the neurone theory. Lugaro,[18] Lenhossek,[19] Barker,[20] Van Gehuchten, and many other authorities, on the other hand, maintain that the observations of Apáthy and Bethe do not warrant the general conclusion that nerve-cells are connected with each other by means of their primitive fibrils. Moreover, Apáthy has only demonstrated a continuous network of elementary fibrils outside the nerve-cells in *invertebrates;* such an arrangement has not yet been proved to exist in vertebrates; in fact, there is the strongest histological evidence that it does not exist. The study of the development of the nervous system and secondary degeneration to my mind shows the genetic and trophic independence of the nervous units; and in spite of the opposition which the "neurone theory" has lately met with in some quarters it is still acceptable.

THE STRUCTURE OF THE NERVE-CELL AS REVEALED BY THE NISSL METHOD.

The Nissl method is generally used for demonstrating the internal structure of the protoplasms of the nerve-cell and its processes, but before referring to pathological conditions as studied by this method it is necessary to make a few remarks upon the method itself, and the appearances presented by normal nerve-cells.

Nervous tissue, which has been fixed in 96 per cent. of

[1] Lecture II. was delivered on June 21st, and Lectures III. and IV. will be delivered on June 26th and 28th respectively.

[2] Deutsche Medicinische Wochenschrift, 1891, Band xvii.

[3] Strieker's Handbook of Histology, Spinal Cord.

[4] Einige hirnanatomische Betrachtungen und Ergebnisse, Archiv für Psychiatrie und Nervenkrankheiten, Berlin, 1887, Band xviii.

[5] The Nervous System (L. Barker).

[6] Sulla Struttura della Sostanza grigia del Cervello, Gazzetta Medica Italiana Lombardia, 1873, tomo vi.

[7] Croonian Lectures, Proceedings of the Royal Society, 1894. Vide Barker's Nervous System for later publications.

[8] Vide Barker: The Nervous System.

[9] Handbuch der Gewebslehre des Menschen, 1896.

[10] Neurologisches Centralblatt, 1899, No. 3.

[11] Anatomie du Système Nerveux.

[12] Das leitende Element des Nervensystems und seine topographischen Beziehungen zu den Zellen, Mittheilung aus der Zoologischen Station zu Neapel, 1897, Band xii.

[13] Ueber die Primitivfibrillen in den Ganglienzellen von Menschen und anderen Wirbelthieren, Morphologische Arbeiten herausgegeben von G. Schwalbe, 1898. Band viii., S. 95.

[14] Archiv für Mikroskopische Anatomie, 1893, 1896, and 1898.

[15] Nervenzellen und Graue Substanz, Münchener Medicinische Wochenschrift, Deutsche Zeitschrift für Nervenheilkunde, 1898, Band xiii.

[16] Beiträge zur Structur der Nervenzellen und Fortsätze, Archiv für Anatomie und Physiologie, Anatom. Abtheilung 1897.

[17] Brain, 1899.

[18] Rivista di Patologia, 1898, p. 500.

[19] Loc. cit.

[20] The Nervous System.

alcohol, formol solution, or corrosive sublimate solution, and of which sections have been cut and stained by basic aniline dyes—e.g., methylene blue, toluidine blue, thionine, and by many other modifications of the original method, shows pictures of the nerve-cells stained in a characteristic manner. If we take as a typical structure an interior horn cell stained by this method we shall observe the following characteristics. The body of the cell is stained a deep blue, but not uniformly, for the staining presents a mosaic appearance, due to little stained polygonal areas disposed more or less concentrically round the nucleus and separated one from another by an unstainable substance. Towards the periphery of the cell these polygonal stained areas become elongated, and upon the dendrons they are fusiform, their long axes being parallel to the processes. At one portion of the cell, if it is entire, a process—the axon—will be observed which does not possess any stainable substance, so that we see that this method differentiates two substances—a chromatic stainable substance and an achromatic substance.

Researches to be afterwards alluded to have shown that the stainable substance is a nucleo-proteid, a substance which contains phosphorus, but in less proportion than the nucleic acid of the nucleus, and the fact that the stainable substance is found around the nucleus may indicate that it is a result of the active metabolism of the nucleus on the surrounding protoplasm. By some authorities it is considered to be a store of nutriment, by others a store of energy; and on this account it has been termed by Marinesco "kinetoplasm." The changes which this substance undergoes, as studied by the Nissl method, show that it has some important functional relationship to the metabolic activity of the neurone; it is, however, not the essential substance. The unstainable substance, on the other hand, is essential, and consists of an organised network of delicate fibrils which extend into the dendrons, forming a network in the cell substance and passing out again in the axis-cylinder process. Consequently there is probably a direct protoplasmic fibrillary continuity between the dendrons and the axons. This was originally stated to be so by Max. Schultze.[21] The nucleus is apparently of simple structure and is permeated by irregular strands of karyo-plasm which form a coarse network; it is apparently situated in the centre of the cell and contains a nucleolus or several nuclear bodies, which, together with the nuclear membrane, stain with a basic dye.

THE SIGNIFICANCE OF THE NISSL GRANULES.

There is a vast amount of literature concerning the stainable bodies called "Nissl granules." They were at one time believed to be an essential constituent of the living cell, but the researches of Hardy have shown that there is a great difficulty in deciding to what extent structure demonstrable in the fresh or fixed state is the product of the chemical and physical changes which constitute the death changes or due to the action of fixatives. Moreover, Held[22] has shown that the *intra vitam* methylene blue method does not reveal Nissl granules in the cells. The stainable (chromatic or chromophilous) substance, therefore, is probably not present in the living cell in the definite form which we see it when the tissues are fixed and stained by the Nissl method. It must not, however, be assumed, therefore, that the method is unreliable as a means of studying the bio-chemical changes occurring in the protoplasm of the nerve-cells, for providing certain precautions are taken, it has proved most valuable in demonstrating functional and organic changes occurring in the nerve cells as a result of injury of the axon or of toxic substances in the blood.[23]

The large motor cells of the cord and brain are the best for studying the changes in the cell protoplasm, because in these structures the stainable substance appears in normal tissues as if it consisted of formed elements (Nissl granules) in the body of the cell and in the dendrons. I have always looked upon these elements as being due to a death-change of the fluid plasm of the cell whereby the nucleo-proteid substance contained in it is thrown down as a fine precipitate, much the same as myosin is precipated from myosinogen. If this substance is abundant in the fluid plasm it produces when precipitated these definite forms, because it fills up the spaces of the unstainable intracellular fibrillary reticulum. "Chromatolysis" is the term which is frequently applied to designate the disappearance or disintegration of these Nissl granules, and there may be various stages of chromatolysis. Usually the process begins at the periphery of the cell and on the dendrons. The stainable substance may be greatly diminished or entirely lost in these situations, or, again, the granules may be seen to consist of fine particles, their definite outline being lost, and in advanced chromatolysis the whole cell may be so affected.

The condition and amount of the stainable substance may be an indication of the functional activity of the cell, and it is conceivable that diminution of the nucleo-proteid colourable substance is the expression of the diminution of the vital interaction of the highly phosphorised nucleus upon the surrounding cell protoplasm. I do not consider that chromolytic changes alone are indicative of cell destruction, for, as I shall show later, most marked chromolytic changes may occur in the cells of origin after section of a nerve and yet the cells may completely recover.

Changes of the cell in form and size may be recognised—e.g., swelling or shrinking, due, no doubt to an alteration of the vital osmotic reaction of the cell-protoplasm to its fluid environment; likewise the nucleus may be clear and swollen or shrunken, the nuclear membrane in the latter case being thrown into folds. Very frequently the nucleus becomes eccentric in position instead of being situated in the centre of the cell, and owing to abnormal osmotic relations and protoplasmic change it may even be extruded and this of necessity would cause death of the cell. Another indication of death of the cell-protoplasm is revealed by uniform staining of the whole cell and its processes. It occurs in hyperpyrexia and in the coagulation necrosis resulting from obstruction of the blood-supply for a sufficient length of time to cause the death of the protoplasm.

The importance of the chemical and histological changes occurring in the myelin sheath in degeneration of the nervous system, the difference of opinion as to its origin, and the important discoveries which have been made by Flechsig, Bechterew, and others with regard to correlation of structure and function necessitate a somewhat full account of

THE MYELIN SHEATH AND NUCLEATED SHEATH OF SCHWANN.

Nerve-fibres are of two kinds, grey and white. The grey sympathetic fibres differ essentially from the white fibres by the existence in the latter of a complex phosphoretted fatty substance lying between the nucleated sheath of Schwann and the axis-cylinder process. The white fibres of the central nervous system differ from the peripheral white fibres by not possessing a nucleated sheath of Schwann. The myelin is probably contained in a neuro-keratin reticulum and this reticulum is much more abundant in the white matter of the central nervous system than in the peripheral, for Kühne and Chittenden[24] have shown that there is about eight times as much neuro-keratin in the white matter of the central nervous system as either in the grey matter of the central nervous system or the white matter of the peripheral nervous system. In 1884 Weigert introduced his hæmatoxylon method for staining the myelin sheath and by means of this Flechsig[25] and his pupils were able to show that certain tracts of fibres of the central nervous system were developed earlier than others. This method and its various modifications (Pal, Marchi-Pal, and Schäfer) have yielded the most valuable results. The different tracts of the posterior columns of the spinal cord were found to be myelinated at different periods, and it was owing to Flechsig's studies that those of endogenous origin (that is, arising from cells *within* the spinal cord) were differentiated from those which are exogenous (that is, have their trophic and genetic centres in the cells of the posterior spinal ganglia). The practical outcome of this research was the modern idea of the pathology of tabes, for it was shown that the exogenous fibres were alone atrophied in tabes, while the endogenous fibres—viz., cornu-commissural zone of Westphal[26] and the median oval area of Flechsig—were spared, these tracts having their trophic and genetic centre in cells within the grey matter of the cord. These facts were recognised as being incompatible

[21] Stricker's Manual of Histology.
[22] Ueber Experimenteile Reizung des Nervenmarks.
[23] Since the method is a *comparative* one great care must be exercised in practising the same details of method of fixation, cutting, and staining the morbid tissues and the normal tissues with which they are to be compared. Again, it is absolutely essential that the tissues examined should be fresh and free from any chance of post-mortem decomposition.

[24] Ueber das Neurokeratin, Zeitschrift für Biologie, 1890, Band viii.
[25] Ist die Tabes Dorsalis eine system Erkrankung? Neurologisches Centralblatt, 1890, vol. iii.
[26] Goldscheider: Die Bedeutung der Reize für Pathologie und Therapie im Lichte der Neuronlehre, 1898.

with the prevalent view that the degeneration was caused by a sclerosis or overgrowth of glia tissue in the posterior columns, or by vascular changes; but they pointed especially to a nutritive failure in the trophic and genetic centre by which the outlying projections of the axis-cylinder processes and their myelin coverings underwent a regressive atrophy; in fact a metamorphosis of the neurones occurred, the inverse of their development.

CORRELATION OF FUNCTION AND MYELINATION.

Again, the researches of Flechsig have demonstrated the different centres of the central nervous system, in which tracts of nerve-fibres have their origin or termination; and it is to the application of this method by Flechsig that we owe one of the most exact, and one of the most valuable, contributions to the structure and functions of the human brain. The method depends upon the fact that there is a correlation between the functions of systems, groups, and communities of neurones and the myelination of their axons; thus, in the brain and the spinal cord of the fœtus, the new-born child, and the developing infant, tracts of fibres are myelinated with definite regularity at successive periods of time, indicating ontogenetically their functional and structural development. The myelin sheath appears three or four months after the development of the axis-cylinder process; for example, a bundle of axis-cylinder fibres demonstrable by the Golgi chrome-silver method at the ninth month would not show a myelin sheath until three months or more after birth. When the myelination of a nervous system is complete further information by a study of the condition of the myelin sheath can only be obtained by observations made upon secondary degenerations produced either by disease or experimentally, and to this subject I shall refer later with especial reference to the Marchi method. To return, however, to the process of myelination. In the central nervous system, the afferent projection fibres are myelinated before the efferent, and it is a fundamental principle that bundles of fibres of different physiological functions are myelinated at different periods of time. The whole afferent tract, conducting tactile, articular, muscular, and visceral sensations by the posterior columns, fillet, thalamus, and corona radiata, is myelinated at birth. These bundles of fibres have already (while the fœtus was in utero) been exercised in conveying impressions to the appropriate receptive centres in the Rolandic region of the cortex, the stimuli being provided by contact of the teguments with the maternal structures and as a result of reflex movements which commence at quickening; for every movement must necessarily be associated with alterations in tension of muscular, tendinous, and cutaneous structures, giving rise thereby to kinæsthetic impressions.

Moreover, the myelination commences first in those parts of the occipital lobe situated around the calcarine fissure, which we know corresponds to the function of vision, the relays of neurones which proceed to the cortex forming the afferent projection systems are earliest myelinated, as they are the first to be acted upon by stimuli which excite the nerve terminations in the skin, joints, tendons, and mucous surfaces of the developing fœtus. Thus, as shown in the diagrams, in the new-born child only the lower centres of the spinal cord, medulla, pons, corpora quadrigemina, optic thalamus, and certain areas of the cerebral cortex are myelinated. The cortical areas which are so myelinated are situated around the primary fissures and correspond to areas which are the end stations of the afferent projection systems; for example, the tactile motor area is situated around the fissure of Rolando; the olfactory, gustatory, and auditory around the Sylvian fissure; and the visual around the calcarine (see Figs. 1 and 2).

Flechsig has shown that at least two-thirds of the cortex cerebri consist of neurones of association, and according to him (although this does not meet with general acceptation) these association centres possess no neurones belonging to the afferent or efferent projection systems. In the fœtus of eight months the pyramidal fibres of the motor efferent system are still without myelin, but Ambron and Held[27] have shown by a new method of examining the condition of the myelin, by the effect produced on polarised light, that the motor fibres of the anterior roots are myelinated earlier even than the posterior roots.[28]

[27] Ueber Entwickelung und Bedeutung des Nervenmarks, Archiv für Anatomie und Physiologie, Abtheilung 1896.

[28] This method is a very ingenious one, and as it is not generally known I will describe it a little more fully. *Method.*—Held and Ambron take nerves of new-born animals, tease them in normal saline solution, and examine them in the following manner with polarised light. They place the two prisms at right angles and put the nerve in the same line as the "quartz plate," when it gives a purple colour. The myelinated nerve will appear red, orange, or yellow, according to the stage of myelination (red being the most advanced); these are the subtraction colours, whereas non-myelinated nerve and connective tissue give the addition colours violet, indigo, and blue. In this way they have examined all the nerves and they have arrived at the conclusion that the peripheral motor nerves are more advanced in myelination than the sensory nerves at early periods of development. Flechsig, as I have remarked, has shown—and they confirm this—that the reverse is the case for the central nervous system. They offer no explanation, but possibly it may be found phylogenetically that in the evolution of specialised reflex acts in the zoological series the motor fibres have acquired first the myelin sheath; or it may be that the sensory bundles are made up of fibres having different functions, and that these are myelinated at different periods of time; again, we know that a large number of fibres entering a muscle (Sherrington) are afferent in function.

In a second paper Held has shown the important influence stimulus has upon myelination, thus establishing still more fully the correlation of function and myelination. Cats, dogs, rabbits (animals which are born blind) were

FIG. 1.

Diagram of vertical section through the brain of a new-born child stained by the Weigert method to show myelination of the fibres. All the parts which are dark contain myelinated fibres. Attention is particularly called to the rather faint deep staining about the central fissure which corresponds to the tactile motor area. It will be observed that the association centres are not myelinated. M O, Medulla oblongata. P V, Pons Varolii. O M N, Oculo-motor nerve. O C, Optic commissure. F A C, Frontal association centre. C C, Corpus callosum. C F, Central fissure. P A C, Posterior association centre. V S, Visual sphere. C, Cerebellum. S C, Spinal cord. It will be observed that the pyramidal efferent system is not myelinated.

experimented on in the following way. Light was admitted for varying periods to one eye by opening a lid, the other remaining closed. Examination of the optic nerve on the two sides under the same conditions showed a more obvious

FIG. 2.

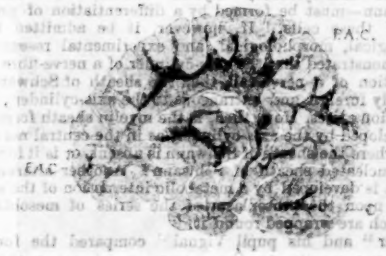


Diagram of vertical section of the brain of a child aged five months. The greater part of the brain now shows by the staining myelination of the white matter, showing development of the association centres. F A C, Frontal association centre. C F, Central fissure. P A C, Posterior association centre. V S, Visual sphere. C, Cerebellum. It will also be noticed that the corona radiata and internal capsule are myelinated.

myelination on the side exposed to light than on the other. The irritation which might be produced by opening the lid was not the cause of this difference, for an animal which had had the lid opened on one side and not on the other but which was kept in darkness showed no difference in myelination of the two sides. The obvious inference is that transmission of light impulses along the optic nerve had stimulated the process of myelination. This experiment agrees with the observations of Flechsig that a child born at eight months showed at nine months more marked myelination of the optic nerves than a child born at full time. Still there must be a primary innate tendency of the axis-cylinder to produce myelin, for a dog kept absolutely in the dark had, on the eighth day, orange-tinted optic nerve-fibres by the polarisation method, showing that myelination had commenced. Edinger[29] states that the discoveries of Kaes show that the cerebral cortex increases in richness of myelinated fibres for a long time, even to the fortieth year and longer, but diminishes in old age. The correlation of function and myelination is proved both by positive and negative results. The myelin appears to be necessary for the functional activity of nerve tracts, at least in animals which possess a nervous system with myelinated fibres, for the development of the myelin along particular tracts of fibres in the central nervous system proceeds in a manner *pari passu* with the development of function. Atrophy and degeneration of the myelin sheath in pathological processes, whether due to disuse atrophy, or to primary or secondary degeneration, are associated with marked disturbances appertaining to the functions of particular systems, groups, and communities of neurones.

THE HISTOGENESIS OF THE SHEATH OF SCHWANN.

This has been studied by many observers, and a paper has recently appeared by Gürwitsch[30] reviewing the work of previous observers and giving his own observation upon this subject. Küpffer,[31] Beard,[32] and Gegenbauer[33] believed that the axis-cylinder is developed from a chain of cells of ectodermal origin arranged in a series. Such an idea would conform with the researches of Apáthy upon invertebrates and is opposed to the axis-cylinder being an outgrowth of a nerve-cell situated either in the anterior cornua or the posterior spinal ganglia. If this hypothesis be true the three constituents of the nerve-fibre—axis-cylinder, myelin sheath, and sheath of Schwann—must be formed by a differentiation of protoplasm of these cells. If, however, it be admitted that embryological, morphological, and experimental researches have demonstrated that the axis-cylinder of a nerve-fibre is a prolongation of a nerve-cell, then the sheath of Schwann is genetically foreign and extraneous to the axis-cylinder; but the question arises, How, then, is the myelin sheath formed? Is it developed by the axis-cylinder, as in the central nervous system where the sheath of Schwann is absent, or is it formed by the nucleated sheath of Schwann? Another alternative is that it is developed by a metabolic interaction of the axis-cylinder upon the protoplasm of the series of mesoblastic cells which are wrapped round it.

Ranvier[34] and his pupil Vignal[35] compared the formation of the myelin to the formation of fat within a fat cell. Vignal's description of the process of myelination is as follows. At a particular stage of development, when the nerve-fibre consists of non-nucleated bundles of fibrils, mesoblastic cells migrate into the interior of the fibre and apply themselves closely to single groups. Their cell protoplasm increases in length and in breadth until some of the primitive fibrils are enclosed. The definite intervals in the enclosing sheath, corresponding to the nodes of Ranvier, coincide with the spaces between the ensheathing cells; consequently each internode represents a segment of the *continuous axis-cylinder* wrapped round by a mesoblastic cell. At the same time, according to Vignal, the myelin appears in the cell protoplasm in the form of minute droplets; these become more numerous and run together to form a general thin covering of the axis-cylinder. Vignal does not deny the possibility that the axoplasm may share in the formation of the myelin, but in quite a subordinate manner. The observations of Boveri, which recently have been confirmed by Bethe,[36] show that the sheath of Schwann is reflected inwards at the nodes along the axon; if this be true there is (as in a serous membrane) a parietal and central layer, and between the two the myelin is contained. This would prove Vignal's hypothesis. Gürwitsch has studied the development of peripheral nerves in embryo sheep, fixing the sciatic nerve with Apáthy's solution and employing various staining reagents used by that observer. He came to the conclusions: (1) that the nerve-fibre is a prolongation of the ganglion cell; (2) that the sheath of Schwann arises from the surrounding mesoblast; and (3) that the myelin sheath has nothing in common with the sheath of Schwann, and probably arises only as a product of the metabolism of axoplasm. Time will not allow me to give you more than

FIG. 3.

Diagram to show reflex arc. A, Skin with sensory endings. B, End organ, Pacinian corpuscle. C, End organ of tendon (Golgi). D, Sensory nerve fibre. (Only one sensory nerve fibre is represented as conveying impulses from the three above-mentioned structures, A B C, but it must be clearly understood that there are separate neurones for each.) E, Cell of posterior spinal ganglion with fine granules scattered through the body of the cell; these are the chromophil granules. Emerging from the capsule is the axis-cylinder process forming a T. The central process passes to the spinal cord; at F F the chain of tubular cells representing the sheath of Schwann ceases; but the axis-cylinder process is still covered with myelin; it breaks up at G into a terminal arborisation, which is in physiological connexion with H, the motor efferent neurone. The lower part of the cell is represented showing polygonal granules (Nissl); the upper part of the cell shows a fibrillary reticulum. The granules exist all over the cell and on the dendrons except at the emergence of the axis-cylinder process, but they are not represented in the upper part in order that the fibrillary reticulum of the achromatic substance may be clearly shown. The axon becomes coated with myelin; at F F it acquires a sheath of Schwann on emergence from the spinal cord and terminates at K in the motor end-plate.

[29] Anatomy of the Nervous System, translated by Hall, p. 233.
[30] Die Histogenese der schwanischen Scheide, Archiv für Anatomie und Physiologie, 1900: Anatom. Abtheilung, I. und II. Heft.
[31] Studien zur Entwickelung-geschichte des Kopfes der Kranioten; reference to Gürwitsch, loc. cit.
[32] Anatomischer Anzeiger, 1892.
[33] Lehrbuch der Vergleichenden Anatomie, 1898.
[34] Leçons sur l'Anatomie du Système Nerveux, 1878.
[35] Ranvier et Vignal: Sur le Développement des Elements du Système Cérébro-Spinal, Paris, 1889.
[36] Loc. cit.

FIG. 4.

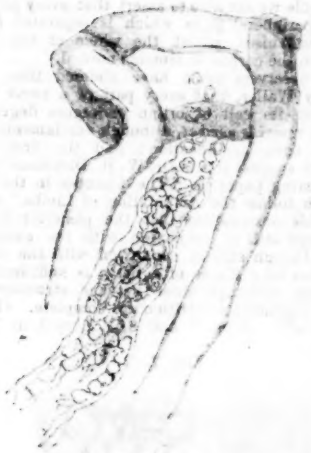
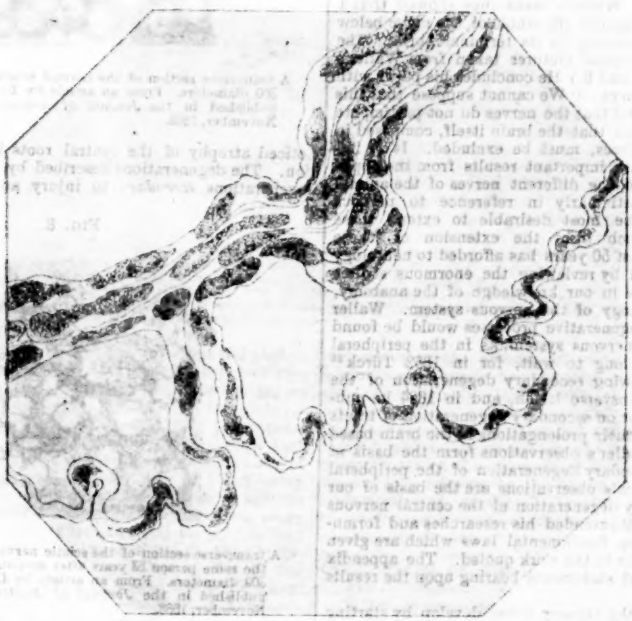


FIG. 5.

FIG. 6.



Drawings from the original monograph of Dr. Waller (*Philosophical Transactions*, 1850) to show the degeneration of the terminal fibrils of the nerves in the papillæ of the tongue of the frog after section of the nerves. Fig. 4, Papillary nerve of frog six days after ligature. Fig. 5, Papillary nerve three weeks after section, with muscular fibres in the interior of the capillary coil at the summit of the fungiform papilla. Fig. 6, Disorganised muscular nerve, from the inferior surface of the tongue, five days after section. The muscular fibre has been omitted in this drawing.

this very brief outline, and to those who are further interested in the subject I would refer them to an admirable digest on the Histology and Pathology of the Nerve-cell, by Ford Robertson,[37] or to the splendid new work of Barker on the Nervous System.

It would take too long here to describe the normal structure of the various forms of neurones, but to make myself more clear in speaking of degeneration and the changes which occur in the nerve-cell and its processes, I represent here diagramatically a spinal reflex arc, showing a sensory and motor neurone. (Fig. 3.) Each portion has a brief description appended, so that I need not detain you further with the details. I would call your attention, however, to two facts—viz., (1) the difference in the myelin sheath as it surrounds the axis-cylinder process and its fibrils within the spinal cord as compared with the myelin sheath outside the same—in the latter the axis-cylinder is surrounded by a chain of tubular cells containing the myelin, whereas in the former there is simply a continuous coating of the phosphoretted fat; and (2) the different arrangement and appearance of the stainable substance in the motor and sensory cell.

THE DEGENERATION OF THE NEURONE—BRIEF HISTORICAL INTRODUCTION.

New methods of experiment, observation, and technique mark the successive stages in our knowledge of the structure and functions of the nervous system in health and disease. 50 years ago Waller[38] gave his memorable communication to the Royal Society which was the commencement of our knowledge of the degeneration of the neurone. In his paper, "Experiments on the Section of the Glosso-pharyngeal and Hypoglossal Nerves of the Frog and Observations of the Alterations produced thereby in the Structure of their Primitive Fibres," he pointed out that Günther and Schön had ten years before stated that the primitive fibres at the end of a week after division of the nerve, and when it had lost its irritability, showed changes indicating degeneration; likewise Nasse and Steinrück had described changes following division of nerves. Waller's researches showed that a change took place throughout the whole of the nerve below the point of section, extending to its terminal fibrils. The diagrams exhibit the original pictures taken from Waller's monograph. (Figs. 4, 5, and 6.) He concludes his paper with this very apposite statement: "We cannot suppose that this is a local phenomenon and that the nerves do not participate in similar alterations, and that the brain itself, composed in great part of tubular fibres, must be excluded. It is impossible not to anticipate important results from the application of this inquiry to the different nerves of the animal system; but it is particularly in reference to nervous diseases that it will be most desirable to extend these researches." How much light the extension of these researches during the last 50 years has afforded to neurology can be best appreciated by reviewing the enormous strides which have been made in our knowledge of the anatomy, physiology, and pathology of the nervous system. Waller had anticipated that degenerative processes would be found to occur in the central nervous system, as in the peripheral nerves. He had not long to wait, for in 1852 Türck[39] published a paper showing secondary degeneration of the spinal cord after a transverse lesion, and in 1854 he published his classical paper on secondary degeneration of tracts in the spinal cord and their prolongations in the brain based upon 21 cases. As Waller's observations form the basis of our knowledge of secondary degeneration of the peripheral nervous system, so Türck's observations are the basis of our knowledge of secondary degeneration of the central nervous system. Waller in 1852 extended his researches and formulated the three following fundamental laws which are given in italics in an appendix to the work quoted. The appendix consists of 52 important statements bearing upon the results of his experiments.

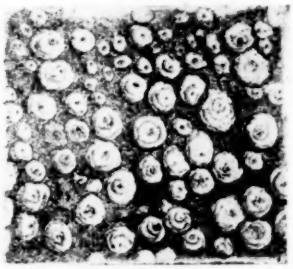
"As a general rule the sensory fibres develop by starting from the peripheral and radical poles of the ganglion corpuscles and extend from these into the peripheral organs and in the spinal cord to a height undetermined."

"The ganglion corpuscle is in consequence the central organ for the formation and nutrition of its peripheral and central fibres and accordingly we shall call it the neurogenotrophic corpuscle and the ganglion the neurogenotrophic body."[40] [The neurone doctrine foreshadowed.—F. W. M.]

"Considering the ganglion in its simplest state as a bipolar corpuscle we are able to assert that every part of the radical and peripheral poles which is separated from the corpuscle disorganises, whilst the whole of the poles in connexion with the corpuscle remains normal."

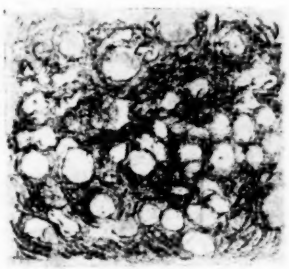
Numerous observers since have claimed that the law formulated by Waller, that every part of a nerve which is separated from its cell of origin undergoes degeneration, *whilst the rest remains normal*, although fundamentally true, may require some modification; and the first observer whom I find to suggest this is Dr. W. H. Dickinson[41] who, in a very interesting paper on "The Changes in the Nervous System which follow the Amputation of Limbs," stated as a result of his observations that the posterior roots may atrophy, though still in connexion with the ganglia, and the anterior though still in connexion with the cord; and it appears that long disuse of a nerve is sufficient to lead to its atrophy, although those nervous structures which immediately regulate its nutrition are complete. (Diagrams here reproduced.) (Figs. 7 and 8.) Bérard in 1839 had noticed atrophy of the central roots in a case of amputation. The degenerations described by Waller and Türck are degenerations *secondary* to injury and that described by Dr. Dickinson and numerous other observers since may be looked upon as a *disuse atrophy*. A little later Gudden[42] commenced his celebrated work upon atrophy of the cells

FIG. 7.



A transverse section of the normal sciatic nerve magnified 300 diameters. From an article by Dr. W. H. Dickinson published in the *Journal of Anatomy and Physiology*, November, 1868.

FIG. 8.



A transverse section of the sciatic nerve from the stump of the same person 53 years after amputation, also magnified 300 diameters. From an article by Dr. W. H. Dickinson, published in the *Journal of Anatomy and Physiology*, November, 1868.

[37] Normal and Pathological Histology of the Nerve-cell, Brain, 1899, Part lxxxvi.

[38] Minute Structure of the Papillæ and Nerves of the Tongue of the Frog and Toad, Philosophical Transactions, 1849; Experiments on the Section of the Glosso-pharyngeal and Hypoglossal Nerves of the Frog, &c., ibid., 1850.

[39] Akademie der Wissenschaften Sitzungsbericht, Wien, Band ii., 1854.

[40] Nouvelle Méthode Anatomique pour l'Investigation du Système Nerveux. 1852. Waller. His son Dr. Waller gives on p. 352 of his Text-book of Human Physiology an unpublished drawing made in 1852 illustrating these very points.

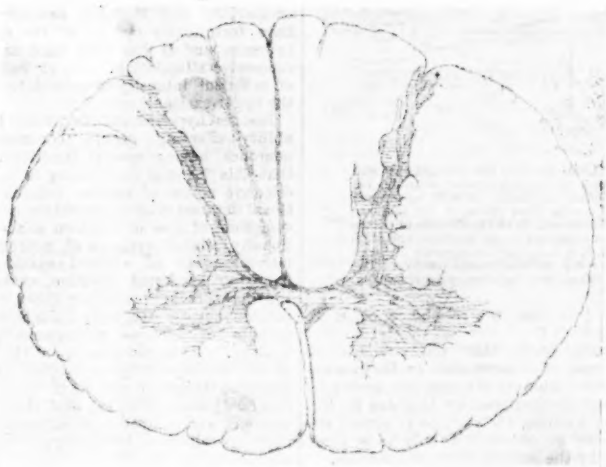
[41] Journal of Anatomy and Physiology, 1868.

[42] Ueber die Kerne der Augenbewegungsnerven, Neurologisches Centralblatt, 1882.

of origin of a nucleus by tearing out the nerve in young animals, and this method threw great light upon the anatomy of the nervous system. It was adopted with striking success by Forel and von Monakow.

There is another form of degeneration which, accepting the cellular theory of Virchow [43]—that the whole organism, including the nervous system, is made up of an aggregation of cells, each cell being a living unit having an independent existence—is a *primary* degeneration of the complex nerve-cell or neurone. Every cell of the body nourishes itself and is not nourished—that is to say, every cell behaves as a unicellular organism possessing a specific energy; and by the vital reaction of its protoplasm upon the lymph environment metabolic exchanges, constructive and destructive, are continually taking place correlative with functional activity. We have no evidence to show that regeneration of nerve-cells can take place in the higher vertebrates, but there is some evidence in favour of the view that all the nerve-cells of the adult body are present in a rudimentary form at birth. The growth of the nervous system depends not so much upon an increase in number of the nervous units, but in their size by multiplication and complexity of the processes. Cajal (I reproduce his diagram) has shown that this growth in complexity during the process of development is not only true ontogenetically but also phylogenetically. (Fig. 9.) Wallerian degeneration proves that the nerve-cell is the trophic centre and the embryological researches of His have shown that it is the genetic centre. If then we admit the generally accepted view that the nerve-cell in the higher vertebrates is incapable of regeneration when destroyed, the corollary is that every nerve-cell of the human body is endowed with a specific durability whereby in the healthy perfect organism every neurone possesses an equally adjusted vital energy, so that not only is functional equilibrium maintained in the physiological processes of active life but also of decay, the regressive metamorphosis incidental to old age being manifested by a gradual and general enfeeblement of the functions of the whole nervous system. Lucretius says: "When the body has been shattered by the mastering weight of Time, and the frame has drooped, with its forces dulled, then the intellect halts, the tongue dotes, the mind gives way, all faculties fail and are found wanting at the same time. It naturally follows that the whole nature of the 'soul' is dissolved like smoke into the high air, since we see that it is begotten along with the body and grows up along with it, and as I have shown breaks down at the same time worn out with age.' [44] In contradistinction to this normal senile decay are premature pathological processes of decay, attacking groups, systems, or communities of neurones subserving special functions, whereby functional equilibrium is destroyed, symptoms of disease are manifested, and according to the functional relations of the system selected characteristic symptoms are presented, constituting clinical groups. The neurones of a particular system die prematurely owing to an *inherited or acquired want of durability* and the regressive process of decay may be looked upon as a nutritional failure on the part of the same cells to maintain that metabolic equilibrium essential and correlative to functional activity; consequently, *those parts most remote from the trophic and genetic centre of the complex cell (neurone) degenerate.* The process may be regarded as the inverse of development, the fine collaterals and terminal arborisations being the first to disappear. Dr. Hughlings Jackson [45] in his Croonian lectures, March, 1884, states: "I have long thought that we should be very much helped in our investigation of diseases of the nervous system, by considering them as reversals of evolution, that is, as dissolutions." Morphologically I conceive that the process of primary degeneration is an evolutional reversal commencing in the structures latest developed, namely, the myelin sheath and the terminal arborisations and collaterals of the neurone.

FIG. 9.



A transverse section of the cervical part of the spinal cord from a man whose left arm had been amputated 23 years before death. The left posterior column (L) is smaller than the right. From an article by Dr. W. H. Dickinson, published in the *Journal of Anatomy and Physiology*, November, 1868. Two circular darker patches in the white matter are accidental imperfections in the picture.

Before entering into a detailed account of my own observations upon the degeneration of the neurone, which will occupy most of the other three lectures, I will give a few illustrations relating to the neurone theory as regards the transmission of impulses and certain physiological problems connected with variable resistance to transmission and the spread of excitation.

EVERY POINT OF THE CENTRAL NERVOUS SYSTEM IS IN PHYSIOLOGICAL, IF NOT IN ANATOMICAL, CONNEXION WITH EVERY OTHER POINT, AND RESISTANCE TO THE SPREAD OF EXCITATION IS VARIABLE.

The nervous system may be said to consist of three systems of neurones—afferent, efferent, and association systems (*vide* diagram). (Fig. 10.) Every excitation can spread over the whole nervous system, but it is difficult to understand how there may be a variable resistance to the spread of an excitation, if we accept the diffuse

[43] Cellular Pathology.

[44] Lucretius, H. J. Monro's translation, p. 124.

[45] Post-Epileptic States, Journal of Mental Science, October, 1888.

continuous network theory of Gerlach or of Golgi, or how use may lead to the opening up of paths so that the time occupied by transmission of impulses may be diminished by repetition. Facts seem to show that there is a delay in the transmission of impulses in the passage from one neurone to another in the central nervous system. Does this delay occur at the junction of the terminal arborisations at the axon of one neurone with

FIG. 10.

Diagram after Ramón y Cajal to show the ontogenetic and phylogenetic development of a psycho-motor neurone. A, Frog. B, Newt. C, Mouse. D, Man. It will be noticed that as the zoological series rises there is an increase in complexity of the neurone and in the multitude of points of contact produced by an increase in the dendrons and side-branches of the axon. *a, b, c, d, e*, show ontogenetic development of a psycho-motor cell in the human embryo. The reversal of this process takes place in primary degeneration.

the dendrons of another? or does the resistance occur in the protoplasm of the cell body?

Bubnoff and Heidenhain found that the strength of stimulus was related to rate of transmission *in the central nervous system*, for on stimulation of the cerebral cortex of the dog, the reaction time is shortened by increase in the strength of the stimulus; whereas *the peripheral nerves* are influenced as regards rate of conduction only to a comparatively trifling degree by the same increase of stimulus.

It would therefore appear that a stimulus passes from the upper neurone to the lower more rapidly when the stimulus is strong than when weak, that is to say, the excitation in the upper neurone must reach a certain intensity before it is capable of flowing over and exciting the next in the series. Is the resistance to the passage of the impulses in the physiological junction of the upper and lower neurones, or in the protoplasm of the cell-body? According to the neurone theory it would be at the junction.

A stimulus which is insufficient to rise into consciousness may, by repetition, lead to summation, and the opening up of a path (*Bahnung*) by breaking down resistance; thus Urbantschitch has shown that very weak sounds, at first not audible, become so by repetition. This effect can be explained by the stimulus opening up the path to the auditory perceptive centre. The same effect can be produced by an effort of the will and concentration of attention, by which the auditory perceptive centre becomes more excitable. That an excitation may spread over the whole nervous system is not to be wondered at when we consider the length of some of the projection system neurones; for example, the posterior spinal sensory neurones, which have their cells of origin in the first sacral ganglion, extend from the nape of the neck to the sole of the foot. The central projection of the T-shaped process gives off a branch, which extends in the column of Goll the whole length of the spinal axis, and the peripheral portion as a sensory fibre extends to the sole of the foot. It is probable, therefore, that the central projection establishes connexions by delicate collaterals with the grey matter of the whole spinal axis. The reason why excitations do not spread is probably dependent upon the condition of the bio-chemical stability of the neurones. In strychnia and tetanus poisoning the most localised peripheral excitation will cause general muscular spasm; in both toxic conditions the spread is probably due to a bio-chemical change in the protoplasm of the spinal motor neurones to be referred to later, whereby the excitability is greatly increased, and a slight impulse is sufficient to fulminate the whole system of motor neurones. In epilepsy and other paroxysmal neuroses and psychoses it is possible that some altered condition of the blood associated with an inherited bio-chemical instability of certain groups, systems, or communities of neurones may act as *a fulminating agent*. In neuralgia and local hyperæsthesia the slightest general or distant local irritation suffices to produce pain; thus coughing, the vibration of a passing train, or a slamming door may produce pain by the stimulation of the hyper-excitable neurones.

If a skin reflex is increased on one side of the body then sometimes a slight excitation on the normal side is sufficient to produce the crossed reflex, while perhaps the excitation is not sufficient to bring about the normal reflex on the sound side. It sometimes occurs that associated sensations (in part of a painful nature) arise from pressure upon spots, which cannot be explained upon any known anatomical basis. This condition can be understood only by supposing that certain groups of neurones are in a state of hyper-excitability, and that the neurones which are stimulated have fortuitously opened up the connexion by association neurones and it has been fixed and made easier by each successive stimulation. The excitation spreads, but it is not of sufficient intensity to arise into consciousness, except in the hyper-excitable area.[46]

Besides hyper-excitability, there may be diminished excitability affecting groups, communities, and systems of neurones having special functions. It will be seen later that this lowered excitability is usually the result of the selective action of various poisons producing either functional depression or degeneration, whereby paralytic or other symptoms of loss of function arise in certain definite functionally related systems of neurones, thus causing correlative groups of clinical symptoms due, on the one hand, to perverted function, or loss of function, and on the other hand producing other groups of symptoms, as pointed out by Hughlings Jackson to be "due to over-activity of nervous arrangements which are perfectly healthy." This disturbance of the functional equilibration of the neurones may be studied by a consideration of the nervous mechanism concerned in voluntary movement. The diagram shows (Fig. 11) that three nervous circles, spinal, cerebral, and cerebellar, are engaged and all three systems of neurones take part, for in every voluntary movement impulses are passing up the afferent channels and down the efferent, and these two systems are brought into physiological harmony by the association systems.

DISTURBANCE OF THE FUNCTIONAL EQUILIBRATION OF THE NEURONES.

The perfection of a voluntary movement is brought about by the association and equable adjustment of systems and communities of neurones presiding over groups of correlated antagonistic muscles in such a way that the desired movement is produced with the least expenditure of nervous and muscular energy. Interference with the functions of any one system will disturb the normal functional equilibration that must of necessity exist in the action of the whole. Dr. Hughlings Jackson emphasises the fact that the symptoms of nervous disease are due as much to normal physiological functional activity imperfectly applied as to the actual loss of function occasioned by the disease. He pointed out that in paralysis of the external rectus, strabismus caused less trouble to the patient than the double vision occasioned by the physiological activity of the two retinæ upon which the images were prevented by the paralysis from falling upon corresponding points. Again, the importance of the integrity of one set of neurones having a specific function upon all the rest of the functionally related neurones was strikingly shown in some experiments by Sherrington and myself,[47] for we found that if the upper limb were rendered *apœsthete* by section of a number

[46] Goldscheider: Die Bedeutung der Reize für Pathologie und Therapie im Lichte der Neuronlehre, 1898.

[47] Experiments upon the Influence of Sensory Nerves upon Movement and Nutrition of the Limbs. Proceedings of the Royal Society, 1894, vol. lvii.

of the posterior roots (third cervical to third dorsal inclusive) not only was the limb of the animal rendered insensitive, but it was unable to perform the finer voluntary movements; although stimulation of the cerebral cortex in appropriate regions produced every movement, showing that the efferent path for voluntary movement was still open, but the animal

FIG. 11.

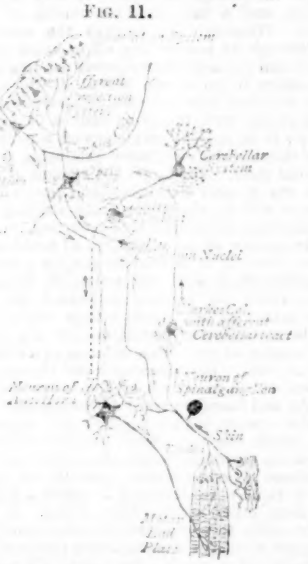


Diagram to show the three systems of neurones, illustrating the path of sensory impulses to the cerebrum and cerebellum, the path of outgoing impulses from the brain in a voluntary movement and the association of the afferent and efferent projection systems in the grey matter of the brain. This diagram also illustrates the path of a simple spinal reflex and of a psychical reflex.

was unable to *ideate* the movement. Another marked effect of section of the posterior roots was the immediate loss of tonus in the muscles, showing that peripheral stimulation is the important reflex agent in its production.

Again, the experiments of Bubnoff and Heidenhain[48] show the intimate relation which exists between the functionally related neurones. They found that a weaker stimulus was required to produce a movement of the limb by faradaisation of the cortex cerebri if the limb were gently stimulated; thus showing that not only in a movement do impulses pass from the cortex to the periphery, but that each successive movement and alteration in tension of the skin, muscles, tendons, and articular ligaments causes a transmission of *kinæsthetic* impulses (Bastian) from the periphery to the cortical centre with an increase of its excitability; thus there is a continuous molecular vibration occurring in all these circles, and this is of importance with regard to the metabolic exchange and nutrition of the neurones themselves; for stimulus is essential to function and bio-chemical action.

In discussing later the changes which occur in motor nerve-cells when their axons are cut we shall better appreciate the changes which take place by remembering that if a muscle is paralysed changes in tension of the related structures—namely, muscle, tendon, skin, ligaments, &c.—cannot occur, and that normal succession of kinæsthetic stimuli which travel up the afferent system *pari passu* with the stimuli that travel down the efferent no longer take place. Warrington,[49] indeed, has shown that section of posterior roots causes chromolytic changes in the anterior horn cells of the same side, indicating that this loss of stimulus produces a depression of the metabolic functions of the spinal motor cells, a fact quite in accord with the physiological results above described.

ANATOMICAL CORRELATION OF ASSOCIATED SYSTEMS OF NEURONES.

The correlation of associated functionally related systems, groups, and communities of neurones finds an anatomical proof in regressive associated atrophy of correlated structures. A good instance of this has lately been investigated in my laboratory by Mr. Tredgold. Cases have previously been published of a similar nature, but there are some points in this case which have not previously been noticed. The patient suffered from right congenital hemiplegia affecting especially the hand and foot. The lesion was primary in the optic thalamus of the left side; it caused atrophy of the left hemisphere, the right half of the cerebellum, and the spinal motor neurones of the cervical and lumbar enlargements, descending degeneration of the right crossed pyramidal tract, and of the left antero-lateral tract. We thus see, referring to the diagram, that all the functionally associated efferent tracts of the three nervous circles engaged in voluntary movement had undergone atrophy in consequence of the disuse occasioned by the primary lesion preventing the development of that normal association of correlated neurones necessary for perfect voluntary movement. There are certain very interesting points in this case which will be fully published in the next number of *Brain*.

Additional References.—Hardy: Structure of Cell Protoplasm, Journal of Physiology, 1899, vol. xxiv., No. 2. Alexander Hill: The Chrome Silver Method, Brain, 1896. Tuckett: On the Structure and Degeneration of Non-Medullated Nerve-fibres, Journal of Physiology, 1896, vol. xix., No. 4. G. Marinesco: Pathologie de la Cellule Nerveuse, Presse Médicale, 1897.

[48] Pflüger's Archiv, 1894, Band xxvi.
Journal of Physiology, 1898, vol. viii., No. 1 and No. 2.

DIFFERENTIATION IN DIABETES.

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(*Continued from p. 1708.*)

THE "ALIMENTARY" FORM OF DIABETES.

A FAULTY power connected with the application of the carbohydrate matter of the food within the system constitutes the essential condition that we have to deal with in this form of diabetes. As a broad fact it is noticeable that when the carbohydrate principles of food are ingested by a healthy person nothing is seen of them afterwards and all that is observed is the general benefit that follows. The system possesses the power of placing them in a position to pass in the direction of utilisation. Neither in the blood of the general circulation nor in the urine do we find evidence given of their ingestion. A certain small standard amount of sugar is met with in both the blood and the urine, and this is not influenced by the presence or the absence of carbohydrate matter in the food. Not so, however, in the case of diabetes. Here the carbohydrate matter of the food finds its way in the form of sugar into the blood and thence into the urine. Failing to be assimilated, or placed in a position to be properly disposed of, it improperly reaches the general circulation as sugar, and this in its transit through the kidney runs off as waste material with the urine.

If by the exercise of assimilative power sugar is prevented from reaching the general circulation it cannot reach the urine. But the assimilative power is not in anyone found to be of unlimited capacity; and in the healthy subject sugar may appear in the urine as the result of an excessive ingestion of carbohydrate matter, especially if it be taken in the soluble form—for instance, as sugar—and at a period of fasting. When the assimilative power falls short of what is natural the amount of carbohydrate food that can be taken by a healthy person without giving rise to the escape of sugar can no longer do so without producing glycosuria, and in proportion as the power is reduced so is the curtailment in the amount of carbohydrate that can be taken without influencing the urine. Very varying degrees of impairment of the power are found to exist in different cases, producing varying degrees of severity of the complaint. This requires to be taken into account in treatment in order that a properly adjusted diet may be supplied to meet the particular demands of the case that is being dealt with. For the adoption, therefore, of a rational mode of procedure it is necessary that differentiation should be extended and carried into the group of cases that is now receiving attention.

We no longer hear of excessive secretion of sugar by the liver being talked of as the explanatory factor of diabetes. It is now generally accepted by those abreast of recent knowledge that things stand in a different position from what was

formerly taught. The phenomena of diabetes, as I have for a great number of years strenuously urged, stand in antagonism to the view that the carbohydrate of our food undergoes a functional transit in the form of sugar through the general circulation from the seat of ingestion to that of utilisation in the tissues. Everything points to the carbohydrate matter belonging to our food passing as sugar into the general circulation in diabetes in a manner that does not occur in health, and our language is shaped accordingly. We speak of its undergoing under natural circumstances a process of assimilation; and, in diabetes, of the failure of the proper performance of this process as leading to the result observed.

The object of assimilation is to put into a suitable state for contributing to utilisation. We know that animals are fat-producers from carbohydrates. No question now exists as to this. I have given grounds[1] for locating the chief seat of this process in the intestinal villi, the fat produced passing, like the ready formed fat that has been ingested, through the lacteals into the circulation. This is one method of the disposal of carbohydrate. I have also at the same time pointed[2] to its disposal by synthesis with nitrogenous matter into proteid, and my views, I think it may now be said, have been accepted by physiologists. Provision is thus made for the transit of carbohydrate within the circulation without passing into the urine. As a small-sized molecule, like that of sugar, there is nothing to prevent its escaping into the urine in the same manner as other small-sized molecular, and therefore diffusible, substances, whilst traversing the vessels of the kidney. It may rationally be taken that the size of the molecule constitutes an all-important point in relation to the question of elimination with the urine, and sugar locked up in a large sized proteid molecule will not be placed in a suitable position for escaping, whilst in a free state it will. The investigations of the last few years on the relation between nitrogen and sugar elimination in phloridzin and pancreatic diabetes in the unfed animal, in which the tissues of necessity are the source of the sugar, show that there must be a very significant amount of carbohydrate entering into the constitution of a proteid molecule.

The recognition of the "*alimentary*" form of diabetes is effected, not only by the elimination of sugar being susceptible of control by the exclusion of carbohydrate matter from the food, but also by the absence of the products, diacetic and oxybutyric acids, of tissue breaking down, to which allusion has previously been made. If the ferric chloride test gives no reaction it may be taken that thus far the case is only in the "*alimentary*" form. It is fortunate for diagnostic purposes that the information can be so easily obtained. Corroborative evidence is afforded by comparing the results obtained by estimation of the sugar by cupric oxide reduction and the polarimeter; but, as has been mentioned, although it is compatible for diacetic acid to be present and oxybutyric acid to be absent the converse is not found to occur, from which it follows that an absence of diacetic acid implies also the absence of oxybutyric acid.

To ascertain the degree of severity of the condition existing in an "*alimentary*" case the food test must be employed. It may happen that the loss of assimilative power is such that even with a properly constructed restricted diet the carbohydrate contained in it (it is not possible to construct an existence diet entirely free from carbohydrate) suffices to throw a certain amount of sugar into the urine, but ordinarily the loss does not amount to this, and then under the restricted diet, rigorously followed, a sugar-free state of urine is secured. With a less degree of loss a certain amount of carbohydrate food is tolerated in conjunction with the restricted diet without leading to the passage of sugar; and so it runs on, more and more carbohydrate being tolerated in proportion as there is less and less loss of assimilative power, until the condition is presented in which it is only when an exceptionally large amount of carbohydrate has been taken that sugar is found in the urine. Such a condition is often the source of considerable perplexity on account of the irregularity as regards presence and absence of sugar noticeable in the state of the urine.

Having determined in a particular case the amount of carbohydrate tolerated the foundation is supplied for adjusting the diet rationally to meet the requirements. What is wanted is to keep the urine free from sugar and whilst doing this to allow as much carbohydrate as the circumstances permit. The medical practitioner has to feel his way, and this is best done by conjoining with the restricted diet a weighed amount of ordinary wheaten bread, which is the article most missed by the diabetic and most easily supplied in regular amount. It may be that only three ounces per diem, in one-ounce portions at each of the three principal meals, are found to be susceptible of being taken without leading to the passage of sugar. It may be four and a half, six, seven and a half, or nine ounces or more that are tolerated. Whatever the amount the conclusion may be drawn through its not running off as sugar in the urine that it falls within the assimilative power existing and thus stands in a position to go to the benefit of the system. Carbohydrate food that fails to be assimilated and is discharged as waste material with the urine cannot be of service to the economy; it is, indeed, pernicious on account of its passage as sugar through the circulation producing a deviation from the natural state. The larger the amount of sugar permitted to reach the general circulation and flow off with the urine the greater will be the abnormality existing and the more pronounced the various troubles occurring.

I have spoken of an allowance of bread as best suited to be given when it is desired to conjoin a certain amount of carbohydrate food with the restricted dietary, but if the quantity could be properly estimated the equivalent of starchy matter in any other article might be substituted. There is no scientific foundation for considering that the starchy matter of one article behaves in a different way from that of another. Between starch and the sugars, however, a difference exists inasmuch as the latter being soluble and diffusible, and therefore ready for immediate absorption, will enter the system with a rapidity not occurring with the former, which has to undergo transformation into sugar by the digestive secretions before absorption can take place. In cases where a considerable quantity of carbohydrate is tolerated it may be desirable to allow a portion of it to be drawn from other articles than bread. If this liberty is given in order to secure that the tolerating capacity is not overstepped a margin of assimilative power should be allowed to exist—in other words, the liberty allowed should stand well within that which will lead to the appearance of sugar in the urine.

We look to the urine for affording the means of ascertaining when the carbohydrate given surpasses the assimilative power existing, but it does not tell us when the carbohydrate is being unnecessarily curtailed. This we learn in another way. It is an interesting fact that the body weight in the following manner supplies the desired knowledge. When there is no toleration of carbohydrate food the restricted diet does not lead to loss of weight. Indeed, when the patient is first put upon it, after having sustained more or less loss before the commencement of treatment, the weight rises, sometimes to a marked extent, and is subsequently maintained. This subsequent maintenance of weight refers to the cases of the "*alimentary*" class in which the restricted diet is necessary for keeping the urine free from sugar. In such cases I have known patients go on for years fully maintaining their weight. On the other hand, should the case be one of a mild nature—one in which starchy food to some extent is tolerated—the restricted diet leads to a fall in weight. Loss of weight on the restricted diet with sugar-free urine may be read as meaning that an unnecessary amount of restriction is being practised, and when the starchy food is given, for the disposal of which sufficient assimilative power exists, the weight immediately rises.

When a restoration of assimilative power occurs in the course of treatment a loss of weight, upon the same principle, sets in unless the condition is met by a properly adjusted supply of carbohydrates. Restoration of assimilative power is the true *desideratum* of treatment and it often happens with persons above middle age that it is to a greater or less extent attainable. At first in these cases there is nothing special observable. The urine more or less quickly loses its sugar and the ordinary improvement in the weight and the general condition of the patient occurs. Later—it may be after the lapse of some weeks but more frequently of a few months—a loss of weight sometimes rather sharply sets in, with possibly a return of the feeling of weakness that was experienced at the commencement, which not unnaturally leads the patient to think that a relapse has occurred. With sugar-free urine, however, these phenomena, instead of being of bad augury, are really a good sign: they are indicative of returning assimilative power. As long as the assimilative power does not exist carbohydrate food

[1] Physiology of the Carbohydrates, 18 p. 248.
[2] Ibid., p. 241.

cannot be wanted by the system. As soon, however, as the power becomes restored the want springs up and unless it is met the described phenomena occur. I cannot penetrate the depths of metabolism and say why this should be, but it may be stated that it represents a return to the position belonging to health. We know that if a healthy person is deprived of carbohydrate food a loss of weight ensues. With the restoration of the absent assimilative power met with in the diabetic we have a retrocession to the natural state, and as the natural state in this respect is regained, so do the co-existing circumstances fall in with it. It is only gradually that the power is restored, and the case requires to be dealt with accordingly. A limited amount only of carbohydrate should be given at first. A large amount would to a certainty bring back sugar. The effect of the carbohydrate is to check the loss of weight and otherwise afford relief. Later there may be a recurrence of the phenomena, and this requires to be met by an advance in the allowance of carbohydrate food. Thus the case may progress until possibly, but not generally, the tolerance of about, or even actually, an ordinary diet is re-established.

The food test is often required to be applied for diagnostic purposes. It may also be turned to account in life insurance cases. In August, 1893, a patient came to me with an indefinite history of diabetes. He was not dieting and only sometimes had sugar been found. The urine passed for my examination at 10 A.M. was free from sugar. The patient went away and partook, at my suggestion, of greengages, sponge-cakes, and lemonade. The urine passed on his return three and a half hours afterwards contained 55·5 per 1000 of sugar.

In April, 1899, my opinion was sought in connexion with a life insurance case. The proposer's urine had for some time been occasionally found to contain sugar. He had been examined by a number of medical men and doubt existed with regard to his state. No dieting had been resorted to. The urine passed at the time of his visit to me contained no sugar. He partook in my house, at my request, of marmalade and bread and butter. This was at 1 P.M. He had a train to catch at 3 and at 2.35 he returned and passed urine which was found by copper reduction to contain 39·8 per 1000 of sugar. The existence of the sugar was confirmed by the polarimeter and the osazone test. In another similar life insurance case the amount of sugar found two and a half hours after the application of the food-test was 8 per 1000.

Any number of examples illustrative of the immediate effect of carbohydrate food on the urine in the diabetic might be brought forward and it represents the great point of contrast with the condition belonging to health. The contrast existing has an underlying significance in relation to the question of whether the carbohydrate of our food normally reaches the general circulation as sugar or not. If it is assimilated and thus disposed of before the general circulation is reached the opportunity is not afforded for its reaching the urine. If not so disposed of some other course of events must ensue and its appearance in the urine as sugar affords an indication of what must have happened. Failing to be properly arrested by assimilative action it passes as sugar into the general circulation where such sugar is to be recognised as distinctly as in the urine.

Everything contributes to show that in diabetes the fault lies with sugar being wrongly permitted to reach the general circulation as a sequence of the non-assimilation of the carbohydrate matter ingested, and not with failure of the disposal of sugar within the circulation under the assumption that it is normally fated to arrive there. The experimental introduction of sugar into the circulation by intravenous and subcutaneous injection affords us help in unravelling this matter and renders it manifest that our carbohydrate food could not reach the general circulation as sugar without the fact being revealed through the medium of the urine. I may refer to an extensive series of experiments recently undertaken by me and published in the *Journal of Physiology* for last year, from which it is seen that sugar, even in as small a quantity as the four-thousandth part of the weight of the animal, cannot be directly introduced into the circulation without exerting an influence upon the urine, and a certain amount of time is required for its disappearance from the blood to be effected. Looking at the quantity of sugar that reaches the urine from carbohydrate food in diabetes it is impossible, in view of the facts before us, to conceive that such could reach the general circulation in the normal state and escape showing itself in the urine. Evidence tells us that the system generally is not devoid of assimilative power over sugar after its arrival in the general circulation, but the power is altogether short of that which would be needed in this way to account for the disposal of the carbohydrate matter of our food, and especially without leading to implication of the urine. Disposed of by transformation into fat and synthesis into proteid before the opportunity is afforded for the general circulation to be reached conditions are supplied that harmonise with all the requirements of existing circumstances. Carbohydrate incorporated within the proteid molecule is in a position to be secure against exit with the urine. It can in this state exist in the circulation without escaping as waste material in its passage through the kidney and subsequently be applied wherever it is needed. In the "*composite*" form of diabetes it is abnormally set free from this combination and thence finds its way as sugar into the urine.

(To be continued.)

SOME NOTES ON THE INTRODUCTION AND SPREAD OF PLAGUE.

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THE gradual extension of plague over the world and its reappearance in Egypt bring home to us with great force the fact that this dread disease is knocking at our very doors and may soon effect an entrance unless we are constantly on the alert to prevent it. It seems, therefore, to be an opportune time to draw attention to some of the known facts about its spread and to make one or two suggestions with a view to preventing its introduction into this country.

It will be as well first to describe the course taken by plague when it attacks a place for the first time and then to consider the course taken by it later when it has assumed an epidemic form, because it has to be borne in mind that plague seldom starts as an epidemic but almost invariably as a few isolated cases which do not tend to spread to any extent and which soon disappear. In Bombay the disease was not recognised until it had practically become epidemic, but it is certain from information that has since been obtained that sporadic cases had been occurring in the city for some considerable time before the first case was reported. In Calcutta, on the other hand, it is probable that the very earliest cases were discovered immediately they occurred, as the health authorities had been constantly on the watch for the disease owing to its presence in Bombay. We have, therefore, had the opportunity in Calcutta of watching the progress of the disease from its commencement until now, when it has become epidemic.

The Calcutta experience has shown—and it is being confirmed elsewhere—that during the first year only a few cases occur. These are generally not of a very severe character, and in a short time the disease apparently disappears. The following year, however, it appears again about the same time as it originally made its appearance. Now, however, there are many more cases, the disease is distinctly more virulent and lasts longer, but can scarcely yet be said to be truly epidemic in character. Once more the disease appears almost to die out, but only to reappear in the next year as an epidemic, and we are now able to note the course pursued by an epidemic visitation. This course is shown very clearly in the chart published by Dr. T. Frederick Pearse in THE LANCET of May 5th, p. 1274. Starting about the time of the original appearance of the disease, at first few cases occur and the numbers increase slowly for some little time; then there is a sudden and swift rise—week by week the numbers mount higher until in about nine or ten weeks from the first definite rise they reach their maximum. For four or five weeks the numbers remain high, but fluctuate somewhat; then the decline sets in and the numbers fall rapidly for some weeks, until at last there is a gradual tailing-off to complete, or almost complete, extinction of the disease. The whole cycle in Bombay of the plague in its epidemic form occupies about six or seven months. During the remaining months of the year the disease appears to be slowly gathering strength for a

fresh and more virulent onslaught. Whether the limit of virulence has yet been reached it is impossible to say, as up to the present the sad experience of Bombay and Poona has only shown that each visitation has been more virulent than those preceding it.

Having described the course of a plague outbreak—and the bearing of this on the prevention of its spread will be seen later—a few words may be said about the means by which plague is passed from person to person and from place to place. Unfortunately, in spite of all efforts to discover it, the means by which plague is communicated from one person to another has not yet been discovered. We do not know how the sick infect the healthy. It appears improbable, however, that much, if any, infection takes place through the air or that mere contact with infected persons is sufficient to cause the disease, as it is rare for attendants on the sick to contract plague. It is very probable that the process is one of inoculation, either through wounds or abrasions, or, what is far more probable, by means of insects, especially fleas. It has been shown by Simon that fleas found on plague-infected rats contained the plague bacillus and it was proved by experiment that such fleas could convey the disease to other rats; and although it has been denied that the fleas which infest rats will bite human beings, it is only reasonable to suppose that the species which do bite human beings are as capable of conveying the disease from a diseased person to a healthy person as the flea of the rat is of conveying it from a diseased rat to a healthy one. It is, in fact, judging by clinical experience, extremely probable that vermin play an active part in passing plague on from person to person.

Of the means by which plague is conveyed from place to place we know very little more than we do about its passage from person to person. It can, of course, be carried by an individual who is already suffering from the disease; other modes of conveyance are more or less conjectural. A certain number of cases have been traced to the importation of rags and dirty clothing from infected localities, and in other cases it is assumed that rats have carried the disease. While it is probably true that diseased rats in one place have been the means of conveying the plague to healthy rats in another it has not yet been shown that rats play an important part in spreading the disease among human beings. In many places a great mortality has been observed among rats prior to the appearance of plague among the inhabitants, but such mortality has not always been followed by plague among human beings. It is possible that both rats and human beings are infected from the same unknown source, but as rats are much more susceptible to the disease than man is we should naturally expect that if both were infected from the same source the rats would first show evidence of the infection, while in a certain number of cases they would be infected and human beings would escape. Inasmuch, however, as the disease found in rats is undoubtedly identical with that which occurs in man, and as in a few cases proof has been forthcoming that persons have contracted plague from the bites of rats, these rodents must be considered to be a source of great danger. It is unnecessary to consider here the other animals which may contract, and be a possible means of disseminating, plague, as Dr. F. G. Clemow[1] has lately published full and instructive notes on this point, and as rats are the only animals with which we are likely to be immediately concerned.

I may now pass on to suggest some of the means to be adopted in trying to prevent the introduction and spread of plague, and must premise my remarks by saying that when once plague has become epidemic in a country we know as yet of no means of absolutely stamping it out. Every effort therefore should be made to prevent the disease from getting a footing in this country, as, once in, we shall have the greatest difficulty in getting it out again.

A recent writer has said that "there is no mystery about plague. It can be stamped out like any other infectious disease or like a pest of locusts or black beetles." Such a statement is justified neither by the present condition of things in Egypt nor by past experience of plague in other countries. Statements of this nature are calculated to do harm by engendering in the public and the profession a false sense of security and by leading them to believe that a few cases of plague occurring in a country are of no particular consequence as they can easily be stamped out by sanitary measures. It is because sanitary measures have hitherto generally failed to effect this desirable result that I lay such stress on our using every means in our power to prevent the introduction of the disease.

The measures to be adopted in preventing the spread of plague may be considered under two heads: first, those adopted by the country in which plague has appeared, to prevent the disease from passing out of the country by sea or by land; and secondly, the measures adopted by threatened countries to prevent the disease from gaining ingress. The Venice Convention has provided for the first, and it is unnecessary to say much about it, excepting on one point and that a very important one. Although provision is made for attempting to prevent the egress of plague while the disease is actually in a country, it cannot be too strongly urged that the danger of exporting the disease is not over when it has apparently been stamped out. Too little attention has been paid to this fact. I have already shown that a period of quiescence always follows an outbreak of plague and is especially marked while the disease is yet new to the country, may indeed be so marked that the plague appears to have ceased to exist in the community. But the belief that plague has died out with the last reported case does not appear to be founded on fact. When once the disease has attacked a place it has been abundantly proved that the same place is liable to be attacked again, and generally is so attacked within the next 12 months. From personal experience and from statements made to me by many capable native medical men in Bombay I am strongly inclined to believe that during the whole time between the dying out of plague in one year and its reappearance in the next the disease is really present among the community in a mild form. In 1898 and 1899, during the time when plague was supposed to be almost absent from Bombay considerable numbers of people suffered and recovered from a disease which there is little doubt was plague in a modified form, but which was not reported as such. The disease at this time was of such a mild nature that most of the characteristic features were absent; it appeared to be passing through a phase when it was gathering strength for a fresh attack, and the cases did indeed become gradually more virulent until they apparently led up to, and became merged in, a fresh outbreak of plague. This modified form may easily be overlooked, especially where simple fever is so common as it is in tropical countries, nevertheless plague is capable of being carried from place to place in this form, and of afterwards passing into the most virulent form of the disease. This probably accounts for the many unexplained outbreaks of the disease in widely separated places where no possible source of infection could be found. The great danger of this form of plague is not only that it easily escapes detection at its place of origin, but that it may give rise in a new community to a disease of such a mild and unsuspicious nature at first that it may have spread considerably and to distant parts of the country before it is recognised. Inquiry has shown that this is not purely an assumption, but that cases of this nature have undoubtedly occurred in India. No place, then, in which plague has occurred should be considered to be absolutely free from infection until 12 months after the outbreak, and suspicious cases should be carefully looked for during that time.

Some of the preventive measures to be adopted by a country threatened with a visitation of plague may now be considered. Most of these are obvious by what has been said about the various modes of disseminating plague. It is imperative, in the first place, that the strictest examination should be made of all vessels and all passengers coming from infected areas, and in this connexion it is necessary to say that we must have the cordial coöperation of the people if our efforts to prevent the introduction of the disease are to prove successful. All persons who come from places where plague is present, or is suspected of being present, should consider themselves possible sources of infection and should not treat even an apparently slight indisposition lightly for at least 10 days after leaving a vessel which has been in an infected port. It is only with the help of such persons that the first cases of plague will be discovered, and it is only by discovering the very first cases that the pestilence will be prevented from spreading and the country saved from this devastating disease.

The second point to which great attention should be paid is the mortality among rats in seaport towns. Not so much with a view to increasing this mortality as because in rats

[1] Brit. Med. Jour., May 12th and 19th.

we have the most valuable known indicator of the approach of plague. If, however, an organised attempt is to be made to destroy the rats in this country, but more especially in seaports, it should be made now; it will probably be useless when the plague has appeared among human beings. It is because rats generally show that plague is present among them before it has appeared among the inhabitants of the same place that, until such time as the rats are exterminated, if they are to be exterminated, a close watch should be kept on their movements and their death-rate in seaport towns, and some of those found dead should be regularly submitted to bacteriological examination. An increase in the rat mortality is a very plain danger signal to which we should pay prompt attention. If the plague bacillus is found in rats submitted for examination persons in the vicinity of the place where such rats were found should be urged to submit to inoculation as a prophylactic measure, and all medical men should be warned to be on the look-out for cases of the disease.

A crusade which it is quite as necessary should be instituted as the crusade against rats is that against vermin—fleas and bugs particularly. As I have already stated there is good reason for believing that fleas convey the plague from diseased persons to healthy persons and may act as carriers between the rat and man. Fortunately the majority of English persons have an instinctive aversion to vermin of any kind and try to keep their homes and persons clear of them, apart from the question as to whether they convey disease or not. But it is quite a different matter in the case of the slum-dwellers. Everyone who is acquainted with the slums in any of our cities knows that they simply swarm with vermin. Our sanitary measures have not touched this evil. We may provide people with pure water, unadulterated food, and good drains, but no sanitary measure, no Act of Parliament, will ensure personal cleanliness. We pride ourselves as a nation on our personal cleanliness. The slum-dweller in these islands is no cleaner than our ancestors were when the Great Plague swept over the country. Nor can we expect much improvement in this respect so long as the terrible overcrowding which is so prevalent in the slums is allowed to continue. This lack of personal cleanliness and this overcrowding constitute a danger of the gravest nature in view of the threatened invasion of plague. It should be made widely known that the extermination of vermin is an important factor in the prevention of the introduction and spread of plague.

The only other point to which I wish to draw attention is the disinfection of rags and dirty clothing coming from infected places. The undoubted danger existing in dirty clothes which have been in a plague-infected house is probably due rather to the vermin so often present in them than to the dirt in which the bacillus is supposed to be present, and for this reason the authorities should see to it that dirty clothing and rags from infected places are not imported into this country until they have been acted on in such a manner that not only all bacilli, but also all vermin, have been killed.

The conclusions to be drawn from these remarks are that if plague is to be prevented from entering this country there must be (1) a most careful search made for modified cases of plague for some considerable time after the disease has apparently died out in places that have been attacked by it; (2) rigid inspection of vessels and passengers coming from infected places, not only while they are known to be infected but for months afterwards; (3) disinfection of dirty clothing and rags coming from such places; (4) a sharp look-out kept for any increased mortality among rats in seaport towns, with repeated search for the plague bacillus in the bodies of those found dead; (5) an attempt made to exterminate the vermin which may act as carriers of the plague; and (6) early inoculation of the people when plague has appeared among rats.

Muswell Hill-road, N.

PRESENTATION TO A MEDICAL MAN.—On the occasion of the presentation of the certificates to the successful students of the "Home Nursing Class" of the Ware Division of the St. John Ambulance Association, held at the Mission Hall, Amwell End, on June 12th, Mr. A. J. Boyd, M.D. Dub., was the recipient of a pair of silver candlesticks and a silver penholder as tokens of gratitude for his able instructions to the class.

ON CHYLOUS ASCITES, WITH AN ILLUSTRATIVE CASE.[1]

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OBSTRUCTION of the thoracic duct, especially if it be gradual, may give rise to no symptoms whatever during life, since anastomotic channels are established through which the lymph and chyle enter the circulation. In other cases, however, congestion of the lymphatic system gives rise to definite signs which can be clinically recognised, and this is especially so when the lacteals of the abdominal cavity are within the area affected. A few cases have been recorded in which chylous fluid was found in the pleural cavity, but in all these this was only secondary to a similar effusion into the peritoneal cavity. Only some 63 cases of chylous ascites are recorded, so that it is an extremely rare condition, and I therefore feel justified in bringing the notes of the following case before the society.

A woman, aged 39 years, was sent to the Royal Infirmary, Edinburgh, by Dr. J. T. Prangnell of Falkirk, on Sept. 29th, 1899. She complained of swelling of the abdomen and gradually advancing weakness and emaciation. Up to within three months of admission she had enjoyed good health. She had had six children—the youngest being three and a half years old—and menstruation had been normal and regular. For two months she had noticed the gradual enlargement of the abdomen and had been losing weight. The patient was found to be generally somewhat emaciated and the examination of the abdomen revealed considerable distension evidently due to ascites. The superficial veins were much distended, the skin was somewhat deeply pigmented, and on deep palpation several irregular hard masses could be detected in the umbilical and epigastric regions. A diagnosis of cancer of the omentum and mesentery with resulting ascites was arrived at. For some time, with careful dieting, the patient's general condition distinctly improved, but occasionally for a day or two she had a relapse showing itself in nausea and vomiting. After being three weeks in hospital she was, however, on the whole, distinctly better, although the distension of the abdomen was greater and caused her much more inconvenience.

On Nov. 2nd the abdominal cavity was aspirated and 380 ounces of fluid were removed. This fluid presented a remarkable appearance. At first sight it was exactly like pus, but when placed in a specimen glass it seemed much more mobile. The fluid had a pale yellow colour with a suggestion of opalescence, and at first it was quite homogeneous, showing no deposit, but after standing for about 24 hours a slight creamy layer was found on the surface. It had a sweetish milky odour. Dr. T. H. Milroy kindly examined the fluid for me and reported as follows:—"The fluid which was sent to me consisted partly of finely emulsified fat, but more largely of a granular débris consisting mainly of fat. About 2 per cent. of fat was present. The pigment present was lutein." The granular débris was found on microscopical examination to consist of leucocytes in a state of fatty degeneration. After withdrawal of this fluid examination of the abdomen revealed a moveable tumour in the region of the gall-bladder and an indefinite irregular solid mass was detected in the region of the greater curvature of the stomach. The aspiration of the abdomen relieved the patient of her symptoms for some time, but she still suffered from occasional vomiting and inability to take solid food. The vomited matter was examined frequently, but contained no blood. From Nov. 16th—that is, about a fortnight after the tapping—remarkable and specially pronounced emaciation set in, while the abdominal cavity became more and more distended with fluid. The discomfort induced by rapid accumulation was so great that, although the patient was evidently sinking rapidly, she was tapped again and about 350 ounces of fluid were removed. The fluid presented exactly the same characters as before. The patient, however, did not seem to improve in the least, but gradually got worse and died five days later, on Nov. 26th.

[1] A paper read before the Obstetrical Society of Edinburgh on March 14th, 1900.

A post-mortem examination was made by Dr. D. A. Welsh of which the report was as follows:—"The body showed marked emaciation and the skin was jaundiced. Thorax.—Pericardium and heart were practically healthy, but the heart was small and showed some brown atrophy. Each pleural sac contained about six ounces of bile-stained fluid. The subpleural lymphatics were studded with minute cancerous nodules; these were not found in the substance of the lung. There were signs of chronic bronchitis and emphysema. Abdomen.—A few ounces of turbid bile-stained fluid were removed from the abdominal cavity. The small intestine showed some commencing peritonitis. The mesenteric glands were generally enlarged from malignant infiltration. The stomach was much shrunken and filled with deeply bile-stained mucus. A large cancerous neoplasm was growing from the inner surface of the anterior wall, extending from an inch from the pylorus for four inches along the lesser curvature. In appearance the tumour was a soft fungating mass raised about one inch above the surface of the healthy mucous membrane and presented some ulceration in the centre. The tumour consisted largely of soft gelatinous tissue, but was evidently malignant in nature and had undergone extensive colloid degeneration. The gall-bladder was distended with bile and the glands and tissues along the larger bile-ducts and in the porta of the liver were extensively infiltrated with cancer. The liver itself contained one small cancer nodule. The spleen was healthy, but the kidneys were somewhat cirrhotic and fatty. The small intestine was throughout its whole length greatly thickened and contracted. It showed an immense number of small cancer nodules surrounding the lacteals close to the mesenteric attachment. The lacteals were very extensively occluded. The thoracic duct and the receptaculum chyli were carefully dissected out and were found healthy. There was, however, a mass of infiltrated glands lying close beside and pressing on the receptaculum."

Remarks.—The cause of chylous extravasation is either an obstruction to the flow of chyle or a distinct rupture of the thoracic duct or of the receptaculum chyli. A few cases of rupture have been recorded—as, for example, by Quincke—in which chylous hydrothorax resulted, and Wilhelm reports a case in which the accident occurred during an attack of whooping-cough. Whitla has also recorded a case of rupture. Rokitansky records a case of peritoneal and pleural effusion in which the fluid was chylous in nature. It was associated with mitral regurgitation and cardiac dilatation. In my case the chylous effusion seemed to be due to an obstruction to the flow of chyle at the junction of the intestinal mesenteric lacteals. The thoracic duct itself was normal and the pressure of the cancerous glands around the receptaculum was probably not sufficient to occlude it. Thus in some cases the lesion was in the thoracic duct itself, whereas in others it has been due to congestion of the larger lymphatic capillaries or of the smaller lacteals within the mesentery itself. In most of the cases the termination has been fatal, due partly to the original disease and partly to the consequent starvation. Some authorities have endeavoured to differentiate between a true chylous ascites and an ascites adiposus or chyliformis. Microscopically the fluids are similar in appearance, but on chemical and microscopic examination the differences are detected. Senator adopts Quincke's classification and distinguishes the two as follows. In chylous ascites the microscope reveals very finely granular fat cells and an absence of large fat-globules; and in adipose ascites chemical examination shows the presence of sugar; it shows similar but much larger fat cells, lymph cells, and in some cases cancer cells. This variety occurs chiefly in tuberculous or malignant peritonitis and is a result of a fatty degeneration of the serous endothelium and of lymph and pus cells. Although this view is very generally accepted a few authorities maintain that the difference cannot be held to be absolute, for they assert that since sugar is absorbed chiefly into the portal circulation direct, and only a minute quantity, if any, by the lacteals, the presence or absence of sugar cannot be considered of any importance in differentiating between the two conditions. Further, they seem disinclined to believe that fatty degeneration of endothelial tuberculous or cancerous cells could occur to such an extent as to give ascitic fluid such definite characteristics.

In a recent paper read at the Société Médicale des Hôpitaux M. Fernand Widal and M. Prosper Merklen discussed lactescent ascites of lymphatic origin. They pointed out that many authorities regarded milky fluid in the abdominal cavity as chylous in nature. Others, however, consider that the fat might be due to fatty degeneration of extravasated cells. M. Lion first showed that milky ascitic fluid might be other than chyle. In a case of cancer of the ovary he found that the liquid contained a substance analogous to casein, but no fat. M. Aschard and M. Apert respectively published cases in which the fluid when examined under the microscope showed no fatty globules but innumerable minute refractile granules. M. Widal and M. Merklen hold that the distinction between chylous and non-chylous ascites presents great difficulties and, further, that in the chylous variety the quantity varies very much in different cases and even at different times in the same case. They also point out that the kind of leucocytes found in the effusion show that chylous ascites may be lymphatic in origin and they record an illustrative case. Microscopic examination of the fluid removed showed no fatty particles but abundance of leucocytes, 90,000 to 100,000 per cubic millimetre. Only cells of different sizes, all with a single nucleus, were discovered. At the necropsy no peritonitis was found and even though there was no apparent lesion of the abdominal lymphatics the milky liquid was proved to be lymphatic in origin. The patient had cirrhosis of the liver and tubercle of the lungs.

Edinburgh.

A PLEA FOR EARLY OPERATION IN CASES OF UNDOUBTED TUBERCLE OF THE LUNG.

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IN bringing forward the following suggestions with respect to the excision of portions of lung tissue in cases of tubercle I am met by two special difficulties. The first is that which must inevitably arise of persuading any patient, feeling comparatively well and suffering only from a small patch of tubercle, to submit to a more or less formidable operation for its removal. The second arises from the same cause and consists in the absence of actual cases of operation of the special kind referred to. I must therefore base my observations, chiefly on anatomical considerations, on accidents affecting the lung tissue and on those somewhat rare cases in which operation on the lung has been found necessary for other and graver reasons. The difficulties will no doubt disappear as the public mind becomes more familiar with surgery, but this can only take place concurrently with its progress in the direction here indicated.

The prognosis of tuberculosis is always difficult, its medical treatment vague, empirical, and uncertain. It is only surgery which offers a really good prospect of success. Some may be disposed to question this, but the fact is in practice admitted, for when any other organ than the lung is attacked extirpation is the first remedy proposed and it is usually attended with success. Tubercle in the joints, tubercle in the glands, lymphatic or otherwise, in the bones and muscles, in the skin, in the abdomen and pelvis is successfully treated by operation, while the lungs—in which, after all, the greatest havoc is wrought by this disease—remain practically unexplored by the surgeon's knife. The futility of all other treatment was recognised a hundred years ago by John Hunter. "Internal remedies," he said, speaking of scrofula, "have very little power."[1] "Local applications—especially those of a stimulating kind—all prove injurious."[2] "As to external parts, the only certain cure is extirpation."[3] "The best surgical treatment for those cases which will not admit of removal is to do nothing."[4] He finally emphasises his opinion by the statement that short of complete extirpation even "cutting always does harm."[5] In principle all these statements still hold good. In practice they mean something very different. Then they meant that most cases were incurable. Now they mean that most cases are curable. The area of surgery has enormously increased since Hunter's time. Indeed, it has been revolutionised. Then the cases that would admit of removal were few. Now the

[1] Works of John Hunter. Palmer's edition, vol. i., chapter xxi., p. 593.
[2] Ibid., p. 600. [3] Ibid. p. 598.
[4] Ibid., p. 600. [5] Ibid.

exceptions are few and surgical treatment is the rule. The principal exception, however, is just that region of the body where the greatest havoc is wrought by the disease. If "the only certain cure is extirpation"[6] extirpation ought to be universal, and our chief object should be to bring these great and highly susceptible organs within the scope of surgery. This does not mean the extinction of the physician. It means a development to the highest pitch of his accuracy of diagnosis, as well as of the observation of the bacteriologist and the skiagraphist, and of the thought, skill, and judgment of the surgeon. It is true now, as it was in Hunter's time, that "parts frequently get well of themselves." But it is equally true that still in some cases "the only certain cure is extirpation."[7] To decide which these cases are will tax all our powers of observation and diagnosis.[8]

The danger, generally speaking, of wounds of the lung is well known and has been recognised from the earliest times. *πάγη δ' ἐν πνεύμονι χαλκός*.[9] In this case death does not seem to have taken place until the abdomen was also ripped open with a sword. 3000 years ago it was understood that wounds of the lung were not immediately fatal.[10] The experiments of Professor A. Richet of Paris[11] on the living dog showed that the total collapse of one lung from opening the pleura caused a considerable degree of dyspnœa (suffocation he called it), but very rarely an immediate fatal result. In man, he says, the case is different: the sudden loss of so large a proportion of the breathing apparatus causes fatal suffocation.[12] He gives one case (from the "Bulletin de Thérapeutique," 1842, tome xxii., p. 358) in which death occurred several hours afterwards from an accident in which the pulmonary pleura was torn open and the lung collapsed; and another (from the "Archives de Médecine," 1840, tome ix., p. 489) in which death took place in three hours, when the right lung was found torn in three places and so collapsed as to be hardly visible. In this case the injured lung was normally the larger of the two.[13] On the other hand, Professor Longmore, in Holmes's "System of Surgery," in his article on Gunshot Wounds, states that "when the compression is limited to one lung, though it may be completely collapsed in consequence, especially if the opening in the chest wall be a large one, the symptom of dyspnœa may be wholly absent."[14] This, however, must be unusual. Indeed, all observers, both ancient and modern, are agreed that traumatic pneumothorax is a condition of great danger, though far less fatal than that resulting from ulceration of the pulmonary pleura from disease.[15] The traumatic form, too, when it affects only one side appears to be rarely fatal immediately. The danger is, *ceteris paribus*, in proportion to the degree of collapse.

This, then, is the most important danger in connexion with all operations involving the lung and pleura. The cause of this danger is an active and not a passive one. It was formerly taught that collapse of the lung in wounds of the chest-wall was due to atmospheric pressure. It is sufficiently obvious, however, that when the pulmonary pleura is intact and the parietal pleura opened the pulmonary pleura is subject to atmospheric pressure on both sides—on the outside through the hole in the chest-wall and on the inside through the trachea. These two are equal and contrary and as they must thus neutralise one another cannot either of them be adequate to cause collapse. There is evidently an active vital force at work also, and this is the retractility which is inherent in the elastic tissue of the lung and is one of the factors in ordinary expiration. The experiments of Richet on the dead subject proved this to demonstration. When the lung was healthy and free from adhesions collapse invariably took place on performing artificial respiration after making a subcutaneous incision into the lung by means of a tenotomy knife.[16] When congestion, or even emphysema, was present in the lung the retractility, of course, was incomplete.[17] But the principal condition which intervenes to prevent collapse of the lung is adhesion of the pleural surfaces. The prevalence of this condition accounts no doubt for many of those cases of gunshot and other wounds of the lung which would otherwise be fatal.[18] In operations on the lung the same holds good. After all, what is the normal condition of the pleura, adherent or non-adherent? Adhesion is due to a morbid process and must therefore be pathological. But a process which after a certain age appears to have taken place in the majority of a species, and which tends to save life after operation or accident, if pathological, can hardly be considered abnormal or unnatural. A condition so prevalent, although apparently subject to no special rule, is anomalous on account of its extensive incidence and its protective influence in certain injuries. It is difficult to see why, important as pleuritic adhesions are in preventing collapse of the lung, all people should, as we suppose, be born without them and that a large proportion should subsequently develop them as a pathological condition. The statistics of their actual incidence it would be interesting to know. A good working majority might sometimes tend to justify an operation.

"Perhaps there is hardly one in fifty," said John Hunter, "who at the age of fifty is without adhesion of the lungs to the pleura."[19] If this is correct—and Hunter was a great dissector and an accurate observer—it looks well for operations on those over fifty years of age, but this is not the age at which we usually expect to meet with incipient tubercle, although it is by no means uncommon even at a much later age. In 1845 Richet, in making some researches on the lymphatics of the lungs, dissected 75 subjects. Of these 150 lungs 36 only were free from adhesions.[20] In this instance he was selecting healthy lungs as far as possible. Ordinarily the proportion of adherent pleuræ was much greater. "Pour mon compte," he says, "depuis plusieurs années que mon attention est attirée sur cette disposition, c'est à peine si j'ai rencontré un sujet sur deux dont les poumons fussent complètement libres dans la cavité pleurale."[21] These figures, however, as far as I have been able on a small scale to test them, seem to be hardly borne out by the experience of some of the more recent examinations. Of 283 cases recorded in the post-mortem book at St. George's Hospital for 1892, 149, or 52 per cent., appear to be free from adhesions or other affections of the pleura; 100, or 35 per cent., to present old adhesions; and 40, or 14 per cent., effusion or growths in the pleura. Of the 149 subjects with healthy pluræ 34, or 22·7 per cent., were over 50; of the 100 with old adhesions 34, or 34 per cent., were over 50; and of the 40 with present pleural mischief eight, or 20 per cent., were over 50. The average age of the cases free from adhesions was 38, of those with adhesions 39·8, and of those with recent effusion 34

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[6] Ibid., p. 598.

[7] Ibid., p. 598.

[8] I am not referring now to the electric cautery, the "point de fer" treatment, as it is called. This is already on trial and has been employed, I believe, with some success, especially in Paris. I refer to genuine cutting operations with the knife, in cases where it may be necessary to remove bodily large or small portions of the lung, or in which the "point de fer" treatment is for any reason inadmissible or insufficient.

[9] Iliad, Δ 528.

[10] This fact has been emphasised more than it has ever been before by the large proportion of recoveries from wound of the lung among the troops now fighting in South Africa. The antiseptic treatment has given such wounds fair play and the opportunity of running their normal course, which in former wars they did not have. In them the deaths were evidently due, not to pneumothorax or emphysema or hæmorrhage, but to septic poisoning.

[11] Surgeon, when I attended his course in 1869-70, to the Hôpital des Cliniques, the special hospital in connexion with the Ecole de Médecine.

[12] A. Richet: "Traité Pratique d'Anatomie Médico-Chirurgicale," 1866, p. 581: "Dans les expériences sur les animaux, sur les chiens, par exemple, la privation subite d'une moitié de l'appareil respiratoire détermine des suffocations qui n'entrainent que rarement une morte immédiate; mais il n'en est pas de même chez l'homme; cette brusque suppression d'une aussi notable partie d'une fonction si prochainement liée à la vie, entraine des suffocations mortelles."

[13] Ibid., pp. 588 and 589.

[14] Holmes's "System of Surgery," second edition, vol. ii., p. 194.

[15] Vide, inter alia, Matas on Acute Traumatic Pneumothorax, Annals of Surgery, April, 1899; Brit. Med. Jour., 1899, vol. i., epitome, par. 343. Poland on Injuries of the Chest, Holmes's "System of Surgery," vol. iii., p. 589. Aitken's "Science and Practice of Medicine," vol. ii., p. 702.

[16] Richet: Traité Pratique d'Anatomie Médico-Chirurgicale, pp. 576 577, 578, 579.

[17] Professor Osler ("Principles and Practice of Medicine," p. 608) appears to be of opinion, based on the experiments of West, that the cohesion between the two pleural surfaces is normally in excess of the elasticity of the lung and is thus in many cases sufficient to prevent collapse. He admits, however, that in some cases pneumothorax has even followed exploratory punctures with a hypodermic needle. It does not seem quite clear that in all these experiments, as in those recorded by Richet, the pleura was absolutely free from adhesions. If not it would explain the strange discrepancy between them and the cases last mentioned, in which adhesions were obviously absent.

[18] One of the first, if not the first, to point out this fact was Roux in a paper in the Bibliothèque Médicale for 1807, entitled, "Sur les avantages de l'adhérence du poumon aux parois de la poitrine dans les plaies pénétrantes de cette cavité." The large percentage of recoveries from wound of the lung already referred to among the troops in South Africa is probably due in some degree to the prevalance of this condition.

[19] Surgical Works of John Hunter, Palmer's edition, vol. i., p. 442.

[20] Traité Pratique d'Anatomie Médico-Chirurgicale, p. 580.

[21] Ibid.

The addition of phthisical cases, which are excluded from the hospital, but in which pleural adhesions are very largely prevalent, would perhaps raise the general incidence of this condition to more than 50 per cent.[22]

In operations of the lung where the pleura is free from adhesions pneumothorax, of course, is possible. Pneumothorax alone, however, and limited to one lung, is not by any means a necessarily fatal symptom. Phthisical cases (and these constitute nine-tenths of all cases in which the pulmonary pleura alone is perforated from disease) die from suppuration or spreading tuberculous mischief, but pneumothorax in an otherwise healthy person—and this includes traumatic cases—often ends in recovery.[23] Rarely indeed does death take place immediately. In the most severe cases recorded some hours have elapsed. It is evident, therefore, that in cases of operation, if a plan of treatment is decided on, there is ample time to carry it out and restore the parts to a more natural position long before fatal collapse ensues.

The first danger, then, to guard against in operations on the lung—and this is present only when the lung is practically free from adhesions—is pneumothorax. In wounds of the lung, however, it seems to be, from recent experience, a not very frequent condition. In his report of the battle of Tugela Mr. Treves gives, among numerous chest wounds resulting in surgical emphysema and hæmothorax, and a case or two of empyema, only one of pneumothorax.[24] In the report of the Spion Kop action he lumps together pneumothorax, hæmothorax, and empyema. Yet, "taken as a whole," he says, "this series of cases has done well."[25] Mr. Dent, in a report from Maritzburg on Feb. 10th, says that although "hæmothorax occurs pretty frequently" "pneumothorax" is rarely seen.[26] Sir William Thomson, writing from Cape Town on March 6th, says: "The penetrating bullet wounds of the thorax are numerous, but are all doing well."[27]

An experiment of John Hunter shows the natural tendency to heal of wounds in the lung and pleura. He shot a dog through the lung to see the process of suppuration in the pleura. "But," he says, "both nature and the dog cheated me, for ..... the dog would always lie on the wounded side. The lungs adhered to the wound and no further inflammation took place."[28] Notwithstanding the result in this case Hunter utters a strong warning against opening the pleural cavity even in cases of pneumothorax and surgical emphysema "because it will produce the suppurative inflammation all over the internal cavities and most probably make the wound in the lung ulcerate."[29] Meanwhile, surgery has made certain advances since the time of Hunter and suppuration is not now the universal bugbear which it was 100 years ago. The history of two recent cases of lung surgery will serve to show some of the possibilities in this direction. The first is a case related by Steiner of echinococcus of both lungs. The symptoms were those of disease of the liver and lungs with displaced heart and a loud murmur. On the left side the seventh and eighth ribs were resected at the back, the pleural cavity laid open, and the echinococcus removed. The lung immediately expanded and filled up the space formerly occupied by the echinococcus. In this case, which was that of a young girl, the operator, Professor Israel, did not trust to the existence of pleural adhesions but united the parietal to the pulmonary pleura by a circle of sutures round the tumour before operating. This is one certain method of avoiding collapse and pneumothorax. The patient recovered and the normal capacity of the lung was completely restored. The tumour on the left side came away through the bronchial tubes during an attack of broncho-pneumonia, but not without some permanent injury to the lung.[30] Surgical treatment, it seems, gave the best results. The second was a case of gangrene of the apex of the right lung operated on by Lejars at the Hôpital Beaujon. The patient was a man, aged 51 years, and, true to the dictum of John Hunter, the two layers of the pleura were adherent. Two inches of the second, third, and fourth ribs were resected in the subclavicular region. The lung was incised and a fœtid mass of filamentous tissue was extracted. The cavity was washed out with hot water, drainage-tubes were inserted, and the skin wound was closed and dressed with iodoform gauze. The operation was perfectly successful, but the patient died six weeks later from a second attack of gangrene, both lungs being infiltrated with tubercle. The opened cavity was healing.[31] It would seem that an early diagnosis of, and operation for, tubercle would have obviated all the mischief. An operation successful at this late stage and in such a condition of the lungs would, *a fortiori*, have been successful at an earlier period for the removal of tubercle at its first appearance.

Another method of preventing collapse and consequent pneumothorax is to excite adhesions artificially by irritating the layers of the pleura in the sound part of the lung beyond the seat of the mischief, thus blocking up that part of the cavity, leaving free, as far as possible, the tuberculous portion which it is intended to remove. This method, however, is objectionable on account of the well-known tendency of tubercle to spread in the lung after any form of pleuritic inflammation. A fourth method has been suggested by Matas in the paper already referred to.[32] His plan is to keep the lung inflated by continuing artificial respiration throughout the operation. This is done by means of a pair of bellows in connexion with an O'Dwyer's intubation tube passed into the trachea. This appears to be free from most of the objections which attend other methods and where there are no adhesions leaves the whole lung free both for exploration and for any operative proceedings that may be found necessary. By one or other of the above methods the danger of pneumothorax and collapse of the lung may be almost certainly avoided in pulmonary surgery. These methods are: (1) to sew the pulmonary to the costal pleura beyond the seat of the disease before operating; (2) to trust in certain cases to the existence of adhesions already formed if the physical signs give evidence of it; (3) to excite artificial adhesions in the pleura; and (4) to expand the lungs artificially from within. The last appears to offer the best prospect of success and can, moreover, be discontinued if extensive adhesions are found to be present.

The second danger is surgical emphysema. It is said that this condition may be fatal from its effect on the muscles of respiration or even from pressure on the phrenic nerve. Emphysema may result from four causes: (1) rupture of the trachea or larger bronchial tubes; (2) external wounds into the cellular tissues surrounding the costal pleura without lesion of the latter; (3) lesion of the costal pleura only with external wound; and (4) lesion of both pleuræ with or without external wound. The first two have no bearing on the subject. The last two are also causes of pneumothorax. Richet is of opinion that pneumothorax and emphysema do not usually occur together.[33] The air escaping from the lung into the cavity of the pleura would, it is argued, take the line of least resistance. This would be that of compressing the lung rather than of penetrating into the cellular tissue. When, however, the lung is fully collapsed there is no more alternate contraction and expansion and consequently no further escape of air into the pleural cavity. He considers that emphysema usually indicates *partial* adhesion. In this case the air escapes into the pleural cavity and, being unable to compress the lung on account of adhesion, penetrates into the cellular tissue. This, of course, would only occur when the external wound is small or non-existent. If it were large (as it would be in the case of an operation) the air would escape through it and emphysema would not occur. In a case under my care, however, occurring in a child in whom adhesions would presumably be absent, emphysema took place

[22] The attendant at the Chelsea mortuary, who has assisted at all the post-mortem examinations for 11 years, gives me nine in ten as the proportion of adherent pleuræ, but this is only a cursory and unscientific observation and there are no statistics.

[23] Osler: Principles and Practice of Medicine, p. 610.

[24] Brit. Med. Jour., vol. i., 1900, p. 221.

[25] Ibid., p. 599.

[26] Ibid., p. 665. [27] Ibid., p. 774.

[28] Works of John Hunter, Palmer's edition, vol. i., p. 444. Two striking cases of recovery from wounded lung are given in the "Annals of Surgery" for April, 1898. In one there was a perforating wound of the liver, kidney, diaphragm, and pleura by the shaft of a wagon. There appear to have been no (or only slight) adhesions, as a quart of blood mixed with bile and urine was removed from the pleural cavity. The other was a wound with a sharp instrument into the lung through the eighth intercostal space (Brit. Med. Jour., August 19th, 1899, Epitome of Current Literature, par. 135).

[29] Works of John Hunter, Palmer's edition, vol. i., p. 445.

[30] Centralblatt für Chirurgie, No. 1, 1898. Brit. Med. Jour., Jan. 22nd, 1898, Epitome of Current Medical Literature, par. 60.

[31] Bulletin et Mémoire de la Société Médicale des Hôpitaux de Paris, March 9th, 1899. Brit. Med. Jour., May 6th, 1899, Epitome of Current Medical Literature, par. 328.

[32] Annals of Surgery, April, 1899. Brit. Med. Jour., May 13th, 1899 Epitome of Current Medical Literature, par. 343.

[33] This is, of course, in reference to cases where the air comes from the lung only.

over the chest, the neck, and the face.[34] The child, however, recovered rapidly and completely without any further symptom, and my opinion from cases I have seen, confirmed by the experience of the war in South Africa, is that emphysema is not necessarily, when uncomplicated, a particularly dangerous symptom. When the pulmonary pleura is intact the case is different. In Mr. Turner's case of rupture of the œsophagus at the Royal Medical and Chirurgical Society emphysema extended over the chest, neck, and face, and the lung was found to be totally collapsed.[35] It is doubtful, however, even in these cases whether the infiltration continues much after the collapse of the lung, as the suction of air through the external wound would then be much less powerful. In operations on the lung the conditions of emphysema should not occur. During the operation it is prevented by the free escape of air through the wound, while after the operation the entrance of air from without is prevented by its closure. From the experience of penetrating wounds at the seat of war the danger does not seem to be great. Sir William Thomson (March 6th) speaks of aspirating in some cases for hæmothorax but does not mention either emphysema or pneumothorax. Mr. Treves (Tugela) gives it (emphysema) as an occasional symptom, but the cases do well generally. At Spion Kop he gives pneumothorax, hæmothorax, and empyema, but no emphysema, while Mr. Dent (Feb. 10th), who refers to hæmothorax as common and pneumothorax as rare, makes no mention of emphysema at all.[36] In fact, surgical emphysema requires for its production a combination of conditions, some of which are usually absent, and although in operations on the lung it is possible for it to occur during the period which elapses between the closing of the external skin wound and the healing or blocking up of the wounds in the pleuræ, it is, for all practical purposes, a "quantité négligeable."

The third, and not the least important, danger is hæmorrhage. The pulmonary tissue is rich in blood-vessels, but these vessels increase in volume as we approach the pedicle and diminish towards the pleura. Therefore, as Richet observes, "superficial wounds, however large, are rarely followed by abundant hæmorrhage."[37] The earlier, then, that a tubercle is excised the less would be the danger. The history of gunshot wounds, too, shows that even when they are extensive the hæmorrhage is by no means necessarily fatal and that there is a considerable tendency to coagulation in the thick venous blood which issues from the arteries and capillaries of the lung. Among Sir W. Thomson's cases hæmothorax was not uncommon, but they all did well after paracentesis, and this seems to be the usual experience. In many other cases a single hæmoptysis was the only symptom, showing the natural tendency to a rapid cessation of hæmorrhage. In Israel's case the pulmonary pleura was possibly left intact, or wounded only to a very small extent. The question of hæmorrhage, therefore, did not arise. In Lejars's case the lung (or pulmonary pleura) was incised to a considerable extent, but here again hæmorrhage was presumably absent by reason of the morbid processes which had been going on in this part of the lung. Indeed, there is no mention of hæmorrhage. In cases where a cutting operation is required at the apex of the lung, and no adhesions are present, the diseased part, if not too extensive, might be included in a single ligature and the whole excised. In other superficial parts the same could be accomplished by drawing out the diseased part through the opening in the chest-wall with hooks or forceps. Where the disease is deeper or more extensive ligatures can be applied, after removal of the diseased portion of lung, to the larger vessels, the ligature in each case including the bronchial tube, with its accompanying artery and vein. In the first two classes of cases the most efficient method, perhaps, of preventing hæmorrhage would be by operating with the electric ecraseur. In the last the electric cautery could be applied after the use of the knife. In all the application of iodoform would be a useful adjunct, both as an antiseptic and a hæmostatic.

In all operations on the lung the introduction of bacteria from without, through the wound in the chest-wall, can be effectually prevented by modern antiseptic methods. But there is in these cases another channel of entrance for bacteria—viz., the trachea and bronchial tubes. The general experience of internal wounds of the lung where the skin is intact points to the pneumococcus as most to be feared in this direction. Pneumonia is the most frequent complication of rupture of the lung and the wounds caused by fractured ribs, injuries in which the trachea is the only passage for microbes, and which resemble in this respect operations on the lung with the external opening in the chest-wall hermetically sealed.

Royal-avenue, S.W.

[34] Reported in THE LANCET, Sept. 21st, 1878.

[35] Paper read before the society on May 27th, 1900. (Emphysema is very prevalent after this accident, probably on account of accompanying rupture of some of the larger bronchial tubes.)

[36] Brit. Med. Journ., vol. i., 1900, pp. 775, 221, 599, and 823.

[37] Traité Pratique, p. 591.

ACROPARÆSTHESIA.

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THE affection called "acroparæsthesia" has, as far as I know, not been described as occurring in this country, though it undoubtedly does occur, and always causes much distress and sometimes leads to inability to work. I shall preface a few general remarks on the subject by describing three cases.

CASE 1.—The patient, a married woman, aged 44 years, engaged in household work, came to the Bristol Royal Infirmary on Dec. 29th, 1898, complaining that on lying down at night her arms up to the elbows became "numb and dead" and "burned" so that she could not sleep. She had suffered in this way for four years, though more especially during the previous nine months. If she sat up in bed and rubbed her hands and arms the disagreeable feeling would get better, but it returned on lying down again, so that she could not sleep until she was quite worn out. She also suffered in the same way though in less degree during the daytime on using her hands. The hands did not change colour during the attacks, nor did she lose the power of feeling with them or of moving them. But for this she considered herself quite well and could not remember having had any serious disease. She menstruated regularly and did not suffer from flushes or anything else suggesting the onset of the change of life. No symptoms which might be hysterical had occurred. On examination no evidence of anything amiss was found; there was no weakness or wasting of the muscles of the arms; the elbow jerks were absent; sensation for touch, heat, cold, and pain was intact; the skin was of a natural colour; and the radial arteries and pulses were normal. The thoracic and abdominal organs and the urine were healthy. There were no hysterical stigmata. On asking her to repeatedly pick up a pin from the table she said, after a short time, that the numbness and burning feeling were coming on, but no vaso-motor change was apparent and sensation was still preserved.

CASE 2.—A widow, aged 48 years, a waistcoat maker, came to the Bristol Royal Infirmary on Dec. 14th, 1898. She said that for the previous three months she had suffered from a dead tingling feeling in both arms, at first in the left hand and afterwards in the right one also. When she was not doing anything she had the dead tingling sensation in the thumbs and fingers only, but on using the hands for any length of time this became much worse and gradually spread up to the elbows. She was consequently unable to earn her living and had to fall back upon parish relief. The feeling did not become worse at night and she could sleep well. The menopause had occurred nine months previously and she suffered much from flushes. As in the previously related case, nothing abnormal could be found on physical examination even when she had been using her hands for a considerable time.

CASE 3.—In this case the patient was a charwoman, aged 41 years. She came to the Bristol Royal Infirmary on Feb. 21st, 1900, and said that she was unable to do anything because using the hands brought on a dead tingling feeling in them which spread up to the elbows and was accompanied by a cramp-like pain, though there was no actual cramp of the muscles. This had been coming on for about five months and was gradually getting worse. She had had to give up her employment and she could not even dress herself or comb her own hair. When sitting quietly and not using her hands she had no tingling, dead feeling, or pain. At night the fingers felt as if they were swollen, though they did not actually swell, so that she took off her wedding ring

on going to bed. The menopause had taken place four months previously and at times she went "all of a fever." On examination nothing abnormal could be found either when she was at rest or when she was using her hands and suffering from the tingling and dead feeling.

These cases are closely similar to those which have been already recorded by Schultze,[1] Chabot,[2] and Lereboullet.[3] The patients were women, between 40 and 50 years of age, engaged in earning their living by manual work, and otherwise in good health. The abnormal sensation complained of was a dead, tingling feeling in the hands and arms, which occurred either at night (as in the first case), or on using the hands (as in the first and third cases), or persistent though much worse on manual labour (as in the second case). In all three cases no objective sign of anything abnormal was discovered either when the patients were free from or suffering from the abnormal sensation. No symptom or sign of hysteria was present.

The pathology of acroparæsthesia is unknown. According to Lereboullet the fault lies in the peripheral venous circulation which, by producing ischæmia, or it may be passive hyperæmia, results in serous infiltration of the terminal branches of the nerves. And certainly in some instances objective signs of vaso-motor disturbance have been noted. But this theory would cover at most a few only of the recorded cases and does not, for instance, explain those described above in which no vaso-motor changes were apparent. The origin of the disease is probably to be found in the age and sex of the patients and the affection may be related to those other abnormal actions of the central nervous system which are so apt to occur in women during the years preceding and following the menopause. The diagnosis should be based on the conjunction of these abnormal sensations with an absence or insignificance of signs of vaso-motor disturbance.

The affections with which acroparæsthesia is most likely to be confounded are hysteria, peripheral neuritis, erythromelalgia, acrocyanosis, acromegaly, and arterial degeneration. Cases of hysteria simulating acroparæsthesia may be diagnosed by the history or by the associated physical signs. Two such cases are the following.

CASE 4.—A woman, aged 43 years, came to the Bristol Royal Infirmary on Jan. 2nd, 1898, saying that for some months she had had a constant "dead" feeling in both arms, which was so distressing that she could not sleep at night or do anything by day. No objective sign of anything wrong could be detected. On making further inquiries she said that she also suffered from a lump rising in the throat and threatening to choke her and that a month previously she had had a fit lasting, she was told, about an hour. The symptoms point to this case being one of hysteria.

CASE 5.—The patient, a man, aged 50 years, a tailor, came to the Bristol Royal Infirmary on July 10th, 1899, complaining that he had a dead, tingling feeling in the right arm and hand lasting all day and preventing sleep at night, also that he could not feel properly with his right hand; for instance, he did not know except by looking whether his thimble was on or off. This condition had lasted for over a year and it was somewhat variable, being worse when his "nerves were low." On examination it was found that a slight right hemianæsthesia existed which was more marked towards the extremity of the upper limb. There was general contraction of both fields of vision and absence of both plantar reflexes, whilst the tendon jerks, abdominal and cremasteric reflexes, and muscular system were normal. This was obviously a case of hysteria.

As a rule, peripheral neuritis can be easily distinguished from acroparæsthesia, though in some cases sensory disturbances may be paroxysmal and resemble those of the latter disease, as is shown by the following case.

CASE 6.—The patient, a tailor, aged 65 years, came to the Bristol Royal Infirmary on April 24th, 1899, saying that he had been ill for three weeks suffering from pain and a dead, numb, pricking feeling in the left hand and arm; this was not constant, but in attacks of from two to three hours' duration several times a day. During these attacks he could not feel to pick up a pin. On examination there was found to be a general weakness of the muscles of the left arm and a blunting of sensibility for touch and pain below the elbow, increasing in degree towards the ends of the fingers and not limited by the distribution of individual nerve trunks. The nerve trunks in the posterior triangle of the neck and in the bend of the elbow on the left side were tender on pressure. No other abnormal signs were present and no history of traumatism, rheumatism, or gout was elicited. A blister on the neck and salicylate of sodium soon relieved him, and on June 5th muscular power and cutaneous sensibility had returned, though the tops of the fingers were said to be still "dead and tingling" at times.

Erythromelalgia can be distinguished from acroparæsthesia by the associated marked vaso-motor changes, by its affecting the feet and legs almost exclusively, and by its dependence on the position of the limb.

Acrocyanosis may be accompanied by abnormal sensations resembling those of acroparæsthesia; the paroxysms, however, are not dependent on using the hands but, at least at first, on external cold, and are always accompanied by well-marked signs of vaso-motor change.

In acromegaly the abnormal sensations in the arms and hands may, as the following case proves, closely simulate those of acroparæsthesia.

CASE 7.—A woman, aged 34 years, came to the Bristol Royal Infirmary on Sept. 27th, 1899, complaining that both her hands and arms felt dead and tingling, especially on first awakening, so that she could not dress herself in the morning. The tingling gradually wore off as the day went on. She had had this for the previous two years and it was gradually getting worse. She had also noticed for about the same length of time that her hands and feet were gradually increasing in size, more especially in breadth. It was found on examination that she had the spade-like hands, broad feet, and coarse features of acromegaly. There was neither anæsthesia of the hands or arms nor evidence of vaso motor disturbances. Under the administration of thyroid and pituitary extracts the abnormal sensations disappeared, though temporarily relapsing when she ceased for a time to take the medicine. The physical signs of acromegaly persisted.

In some cases paræsthesia of the hands may be dependent on arterial degeneration. The condition, however, may be distinguished from acroparæsthesia proper by the greater age of the patients, by the constancy of the abnormal sensations, by the presence of more or less anæsthesia, and by the existence of thickening of the arterial coats. The following are two such cases.

CASE 8.—A needlewoman, aged 60 years, came to the Bristol Royal Infirmary on Dec. 23rd, 1896, complaining of a constant dead tingling feeling in both hands which she had had for the previous nine months and which was gradually getting worse. The hands felt cold and numb and she could not readily pick up a pin or perform any delicate movement with them. She had generally drunk as much beer as she could afford. On examination the hands felt cold and looked bluish and slightly swollen. There was distinct dulling of sensibility to touch and pain in the hands and in the lower part of the forearms, more marked in the right than in the left hand. Muscular power was normal. The radial and brachial arteries were tortuous with thickened coats and the radial pulses were very small. The aortic second sound was somewhat accentuated and the apex beat was displaced a little outwards and downwards. The urine was normal and there was no dropsy. This condition persisted for the eight months during which she attended the Infirmary.

CASE 9.—The patient, a tailor, aged 65 years, came to the Bristol Royal Infirmary on April 9th, 1900, saying that he had a constant sense of numbness and tingling in both hands which had been gradually coming on since the previous November. This numbness and tingling got much better on putting the hands in hot water and when he became warm in bed at night. He also said that he could not feel with the fingers as well as he had been used to and had had to give up his employment. On examination it was found that there was some dulling of sensibility for touch, heat, and pain in both hands below the wrists without any definitely marked upper limit. Muscular power was good. The colour of the hands was normal, though they felt a little cold. There was no swelling. The radial and brachial pulses were small and the coats of the arteries were irregularly thickened. The aortic second sound was slightly accentuated and the apex beat was in the fifth space in the nipple line.

[1] Deutsche Zeitschrift für Nervheilkunde, 1893.
[2] Thèse de Lyon, 1896. Brit. Med. Jour., Epitome, Jan. 21st, 1897.
[3] Gazette Hebdomadaire de Médecine, Sept. 21st, 1899. Medical and Surgical Review of Reviews.

The condition in these two cases is probably to be attributed to arterial degeneration with resulting insufficient blood-supply to the extremities; in neither was there evidence of arterial thrombosis which, as is well known, may be the proximate cause of even gangrene in atheroma.

These various affections which simulate acroparæsthesia can thus be distinguished by the presence of physical signs which are wanting in that disease.

Acroparæsthesia is exceedingly persistent and very rebellious to treatment. It may last for years and seriously incapacitate the sufferer from earning a living. Quinine and galvanism have been recommended by Chabot and ergot is highly praised by Sinkler.[4] As far as my experience goes bromides combined with a small dose of nitro-glycerine were of most service. Under this treatment the first two cases described above completely recovered in six months.

Clifton, Bristol.

THE COMPARATIVE GERMICIDAL ACTION OF SOME DISINFECTANTS.

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THE following experimental investigation was undertaken in order to ascertain the relative germ-destroying power possessed by some of the so-called disinfectants in common use when tested under conditions as precisely similar as it is possible to obtain. For this purpose their individual action was tried upon the same species of germ, of the same degree of virulence, under the same general environment, and for the same length of time, by means of a method which, briefly stated, is as follows: a pure culture of a germ having first been obtained, silk threads are impregnated with this and are afterwards exposed to the action of the disinfectant to be tested in a solution of known strength for a certain definite length of time, at the expiration of which they are removed, well washed in sterilised water, and placed under conditions known to be suitable for the growth and development of the germ in question. Should growth occur it is evident that the disinfectant in this particular strength of solution has failed to destroy the vitality of the germ; in other words, that disinfection has not taken place, and *vice versâ*.

The specific germ selected for these experiments was the bacillus coli communis, a bacillus which occurs normally in the human intestinal tract, and in health appears to be innocuous, but which under abnormal conditions may become markedly pathogenic. This bacillus possesses some very distinct advantages for the purpose of this investigation: it is extremely easy to obtain it in large quantity owing to the profuse nature of its growth on potato; it has many characteristic reactions by which it can be readily distinguished from other bacilli and by applying these at different stages in the course of the experiments it is possible to establish the purity of the cultures throughout; while, since it has, for a non-sporing bacillus, a comparatively high power of resistance to germicides, any results obtained with it may be held to apply even more forcibly in the case of other non-sporing bacilli, at any rate of such as are pathogenic. The bacillus was isolated from the stools of a young girl suffering from enteric fever by the method of successive gelatin plates. A pure culture having been obtained and proved by means of the characteristic reactions to be the bacillus coli communis, a stock culture was made on the sloped surface of agar-peptone bouillon in tubes and from these subcultures on potato were taken as required. These were made on the surface of freshly prepared sterilised potato medium, and were incubated at 37° C. for 10 days, when a profuse dark-brown growth, very characteristic of this bacillus, was found to have formed. This was removed with a thick sterilised platinum wire (care being taken not to carry along with it any of the potato medium), and mixed in a sterilised glass capsule with a little sterilised peptone bouillon so as to form a thick emulsion, into which the silk threads were immersed. These threads were cut from the finest "Turner's plaited silk," each being exactly one inch long, and were sterilised in a Koch's apparatus for one and a half hours in Petri's dishes, in which they were afterwards dried and kept till required for use. After immersion in the emulsion for 10 minutes the threads were transferred with sterilised forceps to a Petri's capsule, in which they were partially dried in the dark at a temperature of 24° C. for three hours by placing them in the "cool" incubator. They were next transferred to the disinfectant solutions to be tested, and after remaining in these for the allotted time were lifted out with a sterilised platinum hook, washed well in sterilised distilled water in order to remove any trace of disinfectant adhering to them, and placed each in a separate tube of sterilised peptone bouillon. These tubes were incubated at 37° C. for 10 days, being examined each 12 hours for the first 48 hours, after that daily. If no growth occurs the bouillon is perfectly clear at the end of this time; if it does occur the bouillon begins to show signs of turbidity at a period varying from 12 hours or even less to 72 hours. The presence or absence of growth is further shown by microscopical examination, and by the inoculation of gelatin plates. If no growth had taken place at the end of 10 days it was concluded that all the bacilli present on the thread had been killed by the disinfectant solution. In every case a control experiment was made precisely as above, except that sterilised distilled water replaced the disinfectant solution, and in each instance growth was found to be present at the end of 12 hours.

Objection may possibly be raised to the above method on the ground that some of the disinfectant solution might be carried over on the thread into the bouillon, and so, by its antiseptic or inhibitory action, prevent the development of bacilli in the thread which were not actually killed by it. To guard against this the threads were, as already stated, well washed in sterilised distilled water after removal from the action of the disinfectant, and as a further precaution all those tubes which exhibited no growth at the end of 10 days were re-inoculated from an emulsion of bacilli prepared as above and again placed in the incubator. In every such case growth occurred at the end of 12 hours, thus proving that the bouillon in these tubes was still a suitable medium for the development of the organism, and that their previous sterility was due, not to any transferred disinfectant, but to the fact that all the bacilli on the thread had been completely destroyed.

In order to establish a fair comparison between the germicidal effects of the various disinfectants tested I decided to allow the threads to remain in solutions of them for certain definite lengths of time, and to ascertain the weakest strength of any given disinfectant which would destroy all the bacilli on the threads in these times respectively—viz., one minute, five minutes, 10 minutes, 30 minutes, and one hour. For each strength of a disinfectant solution acting for a given time (e.g., carbolic acid, 1 in 20 acting for five minutes) six threads were used, each being subsequently placed in a separate tube of bouillon and incubated. In by far the majority of cases the result was the same in each of the six tubes, either positive or negative, showing that every care had been taken to prevent contamination of the threads in the process of transference from the disinfectant solution to the bouillon tubes. But occasionally, when approaching the limit of the germicidal power of the particular strength of disinfectant used, there was some discrepancy—e.g., five tubes might give a positive and one a negative reaction, or *vice versâ*, in which case the verdict of the majority was taken to be the correct one. If, however, the discrepancy were more than this—e.g., four and two, or three and three—the experiment was repeated with a second set of six threads, and the majority taken.

The following substances were tested: biniodide of mercury, perchloride of mercury, chlorinated lime, formal aldehyde, lysol, carbolic acid, izal, medical izal, creolin, Jeyes' sanitary fluid, Walker's I.X.L. disinfectant fluid, Condy's fluid, "sanitas" fluid, and boric acid. These experiments involved the inoculation and culture of some 2000 tubes of bouillon and were conducted in the laboratory of the Manchester Union Hospital, Crumpsall, during six months of my tenure of the resident medical officership there. The ultimate results obtained are arranged for ready comparison in the accompanying table, where, in addition to stating the weakest strength of each disinfectant necessary to kill the bacillus coli communis in the allotted times, I have in each case further stated that strength which just failed to do so.

In interpreting these results I wish it to be clearly understood that they are merely relative and can only be held to be absolute under the exact conditions laid down for these

[4] Philadelphia Medical News, 1894.

TABLE SHOWING RESULTS OF EXPERIMENTS.

Disinfectant.	Weakest strength of solution necessary to destroy the bacillus coli communis in the following times—									
	One minute.	Next strength tested that failed to destroy.	Five minutes.	Next strength tested that failed to destroy.	10 minutes.	Next strength tested that failed to destroy.	30 minutes.	Next strength tested that failed to destroy.	One hour.	Next strength tested that failed to destroy.
Biniodide of mercury	1 in 1000	1 in 1500	1 in 5000	1 in 7500	1 in 20,000	1 in 25,000	1 in 80,000	1 in 100,000	1 in 200,000	1 in 250,000
Perchloride of mercury	1 in 750	1 in 1000	1 in 2000	1 in 3000	1 in 7,500	1 in 10,000	1 in 15,000	1 in 20,000	1 in 40,000	1 in 50,000
Chlorinated lime	1 in 80	1 in 100	1 in 150	1 in 200	1 in 500	1 in 600	1 in 1,500	1 in 2,000	1 in 3,000	1 in 4,000
Formal aldehyde	1 in 30	1 in 40	1 in 50	1 in 60	1 in 100	1 in 150	1 in 150	1 in 200	1 in 250	1 in 300
Lysol	1 in 10	1 in 20	1 in 30	1 in 40	1 in 100	1 in 150	1 in 250	1 in 300	1 in 300	1 in 400
Carbolic acid	1 in 10	1 in 20	1 in 40	1 in 60	1 in 80	1 in 100	1 in 100	1 in 150	1 in 150	1 in 200
Izal	—	Undiluted.	1 in 10	1 in 20	1 in 80	1 in 100	1 in 250	1 in 300	1 in 300	1 in 400
Medical izal	—	Undiluted.	1 in 10	1 in 20	1 in 80	1 in 100	1 in 250	1 in 300	1 in 300	1 in 400
Creolin	—	Undiluted.	1 in 5	1 in 10	1 in 60	1 in 80	1 in 150	1 in 200	1 in 200	1 in 300
Jeyes' fluid	—	Undiluted.	1 in 3	1 in 5	1 in 60	1 in 80	1 in 100	1 in 150	1 in 200	1 in 200
Walker's I.X.L. disinfectant	—	Undiluted.	Undiluted.	1 in 2	1 in 20	1 in 40	1 in 80	1 in 100	1 in 100	1 in 150
Condy's fluid	—	Undiluted.	—	Undiluted.	1 in 2	1 in 3	1 in 10	1 in 20	1 in 40	1 in 60
"Sanitas" fluid	—	Undiluted.	—	Undiluted.	Undiluted.	1 in 2	1 in 2	1 in 3	1 in 3	1 in 4
Boric acid	—	Saturated.	—	Saturated.	—	Saturated.	—	Saturated.	—	Saturated.

experiments—i.e., where the bacilli are freely exposed to the action of the disinfectant in solution, no albuminous matter being present. In the actual practice of disinfection such conditions are never met with, the most important difference being the presence of albuminous material in greater or less quantity. Especially does this apply to the case of perchloride of mercury, which forms a definite combination with albumin, resulting in the formation of a comparatively inert albuminate of mercury, and thus, to maintain its efficiency, the strength of the solution would require to be increased in proportion to the amount of albuminous matter present.

Biniodide of mercury.—This was brought into solution by the addition of iodide of potassium in quantity just sufficient to dissolve it, a stock solution of 1 part of biniodide in 500 of distilled water being first prepared, from which the more dilute solutions were afterwards obtained by the addition of the requisite proportion of ordinary tap-water. It will be noted that the germicidal power of this drug is far superior to that of any other used in these experiments, and as it does not precipitate with albumin the results obtained should hold good even in the presence of albuminous material, thereby contrasting with the perchloride of mercury.

Chlorinated lime (commonly called "chloride of lime").—This is a white powder which is only partially soluble in water, and after standing for a little the insoluble portion falls to the bottom. This was kept in suspension in these experiments by frequent shaking of the glass vessel containing the threads immersed in the solution, but I also found that the germicidal power was not in any way altered by previously filtering the solution so as to remove this insoluble portion. In the stronger solutions of this substance not only are the bacilli on the threads all killed but the threads themselves are destroyed and in a short time almost all trace of them disappears.

Formal aldehyde.—The solutions of this substance were prepared from Schering's formalin, which is a 40 per cent. solution of formal aldehyde in water, the latter itself only existing in the gaseous state. It must be clearly understood that the proportions stated in the accompanying table refer to formal aldehyde and not to formalin.

Izal and medical izal.—These two coal products are prepared by Messrs. Newton, Chambers, and Co., the latter being a refined preparation of the former specially adapted to medical and surgical use. I found no difference between them as regards their germicidal properties. It should be stated that the proportions given in the accompanying table refer to the product as sold for use and not to the proportions of izal oil, of which "izal" disinfectant is an emulsion containing 40 per cent.

Boric acid.—This substance has no claim to be regarded as a disinfectant, since its saturated solution failed to destroy the bacillus coli communis in any of the allotted times.

Manchester.

ACUTE GLOSSITIS COMPLICATING A CASE OF TYPHOID FEVER.

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THE patient, a woman aged 34 years, suffering from typhoid fever, was admitted into the Middlesex Hospital on Nov. 17th, 1899, under the care of Dr. J. Kingston Fowler, to whom I am indebted for permission to make use of the clinical notes of the case. The early symptoms of the attack consisted of weakness, languor, pain in the back, and shivering. The bowels were confined at first and later they became more freely opened, but diarrhœa was never a troublesome factor. There was no vomiting. The blood showed Widal's reaction and the urine gave Ehrlich's test. There was a well-marked rash on the abdomen.

The patient was from the first very seriously ill and in spite of all treatment her condition became gradually worse till on Dec. 16th the pulse was scarcely perceptible and she was evidently *in extremis*. On the 17th, at 7 P.M., the tongue was first noticed to be swollen and examination showed the swelling to be confined to the left half of the organ. This condition must have arisen very rapidly as the tongue had previously been examined at midday and there was then no sign of any swelling. The swelling was firm and did not fluctuate, the mucous membrane over it was reddened, it was tender when touched, and gave rise to some difficulty in swallowing. At 10 P.M. on the same evening the swelling had increased and it now involved the right half of the tongue. The size of the swelling made it advisable to take some steps to try to reduce it, and accordingly after the part had been anæsthetised with cocaine a grooved needle was passed into the tumour, but only a little blood escaped. The patient's general condition, however, was so bad that it was not considered advisable to take any further measures and a few hours later death occurred. A post-mortem examination was made on the following day and extensive intestinal ulceration was found which had terminated in general peritonitis from a perforation at the lower end of the ileum. The tongue was swollen, especially the left half, and the mucous membrane over it was reddened; there were also one or two superficial

ulcerations on the dorsum of the tongue. On section the tissues were reddened and swollen, but there was no suppuration present.

The condition is of interest both on account of its rarity and its importance, for it may be a very formidable complication, and in this case had the patient not succumbed to the intestinal lesions vigorous measures would, no doubt, have had to be taken to reduce the swelling.

A case which occurred in Dr. Osler's clinic has been recorded by MacCrae,[1] in which glossitis was the first symptom of a relapse after 24 days of normal temperature. The tongue was red, inflamed, symmetrically enlarged, markedly tender, and somewhat indurated as far back as could be felt. Cultures taken from the left half gave a negative result, and after puncturing, the swelling of this half diminished, showing, as MacCrae thinks, the line of treatment which should be pursued. In this instance the patient made a good recovery. MacCrae states that this was the only case of glossitis which occurred in over 700 cases of typhoid fever treated in the Johns Hopkins Hospital. He quotes Nichols as having recorded a case of "septic infection in typhoid fever" in which two days before death swelling of the right half of the tongue was noted. This case ended fatally. At the necropsy the right half of the tongue was red and swollen and on section small abscesses and hæmorrhages were seen. Cultures yielded streptococci and the bacillus coli.

The cause of glossitis in the course of typhoid fever is an interesting question. The large majority of the cases probably arise from secondary local infections, and the presence of superficial ulcers of the tongue is suggestive of this mode of origin in the case I now record. Other cases, however, would seem to be part of a general infection—as, for instance, MacCrae's case in which the glossitis was the first symptom of a relapse after 24 days of normal temperature.

Queen Anne-street, W.

[1] Johns Hopkins Hospital Bulletin, May, 1898.

IMPERFORATE HYMEN AND RETAINED MENSTRUAL ACCUMULATION.

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I WAS called on Jan. 4th, 1900, to see a girl, aged 13 years and nine months, who was complaining of diarrhœa, rigors, and abdominal pain. The history was that on Dec. 30th, 1899, she began to suffer from diarrhœa and on the following day abdominal pain set in. This state of matters continued more or less until Jan. 4th, when diarrhœa, bearing-down pains, dysuria, and, finally, retention of urine supervened. The mother stated that the girl had always enjoyed good health. She had never menstruated, but as bearing upon her present illness it was noticed when a child that there was a "large blue vein" about the lower aspect of the genitals. Nothing, however, in the way of operation had been done for it. The girl was in a condition of extreme distress, crying out with agony and throwing herself about in bed when paroxysmal pains set in. She was a well-nourished and well-developed girl with womanly configuration, having large, plump, and well-formed breasts. The lower aspect of the abdomen showed a large, round, globular tumour which rose out of the pelvis, reached from the pubes to two inches above the umbilicus, and was so tense and resistant that it simulated the gravid uterus. Fluctuation could not be elicited. The vulva was greatly bulged downwards and the perineum was distended. On separating the thighs, but without everting the labia minora, the vaginal orifice was seen to be completely occluded by a bulging membrane across which some minute blood-vessels were traced. The colour of the membrane was that of a bluish plum; it measured two and a half inches and one and a half inches from before backward and had a convex projection one inch in extent. Fluctuation was here easily obtained. There was a considerable bulging of the lower aspect of the vulva and adjacent parts. There was no dilatation of the anus, although there had been severe diarrhœa. Rectal examination revealed that the lower lumen of the bowel had been extensively encroached upon by a large balloon-like mass, which was smooth and elastic. This tumour had not only pressed upon the bowel, but had pushed up the anterior aspect of the vulva to such an extent that the meatus urinarius was practically occluded, causing complete retention of urine.

On a catheter being passed 40 ounces of urine were drawn off, and to clear out the bowels thoroughly castor oil was ordered. The parts were also prepared for operation next morning. In the interval, however, previously to my arrival the dense membrane had become perforated in the median line. This aperture was only able to admit a small probe, yet a considerable amount of treacle-like substance had cozed out, and thus there had come about that slow aspiration which most authorities recommend in treating such cases. The vulva and perineum were again thoroughly cleansed by a solution of lysol (1 in 200). An incision with a sterilised knife was then made from before backward in the entire extent of the membrane in the median line. The index finger was introduced into the now open vaginal orifice in order to induce a free flow of the retained menses. The mucous membrane of the utero-vaginal canal was found to be perfectly smooth and devoid of rugæ. Suprapubic pressure was avoided during the evacuation of the fluid, and to prevent re-uniting of the cut surface of the membrane a sterilised perforated glass tube containing iodoform and boric powder was inserted into the aperture and retained *in situ*. Pads of wood wool were then placed over the vulva and perineum and fixed in position with a double T bandage. The patient was instructed to put gentle pressure on the glass tube to keep it in position when passing urine, and her mother, the nurse, was instructed to cleanse the parts most carefully thereafter with lysol solution on each occasion. For diet the patient had milk only, and two grains of quinine were given every three hours. The recumbent posture was enjoined unless while taking food when the semi-recumbent position was to be adopted.

On Jan. 6th I found that the patient had passed a good night; her temperature was 98° F. and her pulse was 89. I removed the glass which was half filled with the treacle like material. Examination per rectum showed that the balloon-like mass had disappeared. Examination per vaginam failed to detect the os uteri. There were now, however, well-marked rugæ felt longitudinally in the previously smooth-lined utero-vaginal canal. The retained menses were apparently well drained. The glass tube was sterilised and again inserted and the same kind of dressings were applied. The subsequent history of the case was quite uneventful. There was no rise of temperature and the girl was allowed to get up on Jan. 12th, on which date there was no discharge of any kind in the tube or on the dressings. On the 15th examination per vaginam revealed rugæ almost of a scirrhus-like nature. The uterus was found to be normal and the os closed. It was directed that the glass tube should be inserted twice a week for some time. On Feb. 17th (six weeks after the operation had been performed) the girl menstruated normally, being poorly for four days.

It will be observed that the patient had reached puberty, although she was barely 14 years of age, and the accumulation must have been going on for many months to judge from the size of the abdominal swelling. It contained over three pints of altered blood which continued to run for several days as the uterus slowly contracted. The girl was quite unaware that there was anything abnormal and stated most clearly that there had been no monthly periodic occurrence of pelvic or bearing-down pains whatever.

Previously to the era of asepsis and antiseptics incision of an imperforate hymen was not infrequently followed by fatal results from septic absorption. Gradual withdrawal of the fluid enables the uterus to accommodate itself to its diminishing contents, but, as Lewers has pointed out, if it is rapidly emptied contractions are set up, some of the fluid with septic matter from the air may be forced along the Fallopian tubes into the peritoneum, and death from peritonitis may result.

Newmilns, Ayrshire.

THE Colne Town Council has decided to erect a new infectious diseases hospital at the Old Farm, near Colne, at an outlay of £8530. Accommodation will be provided for 26 beds.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

ST. PANCRAS INFIRMARY.

A CASE OF THROMBOSIS OF THE SUPERIOR MESENTERIC VEINS.

(Under the care of Dr. W. M. DUNLOP, medical superintendent.)

AMONG the many conditions simulating true intestinal obstruction there is none more interesting than thrombosis of the mesenteric vessels. Either the arteries or the veins may be affected; in thrombosis of the arteries the symptoms are very acute, but when the veins only are involved the more chronic forms of obstruction are simulated. Barth,[1] Bradford,[2] and Koster[3] have published cases of thrombosis of the mesenteric veins and 14 cases have been collected by Elliot. In most cases a diagnosis of intestinal obstruction is made and a laparotomy is performed. In one case in which the arteries were thrombosed the portion of bowel concerned was excised with success. For the notes of the case we are indebted to Miss Mabel Stevenson, M.B. Lond., junior assistant medical officer.

A man, aged 51 years, was admitted into the St. Pancras Infirmary in a state of extreme collapse. The patient could give very little account of himself, but stated that for some time he had been suffering privations and had had vague abdominal pain. Two days before admission he was suddenly seized with acute pain in the hypogastrium accompanied by vomiting. In this condition he was found by the police and taken to the infirmary. On admission he was evidently moribund, with subnormal temperature and pale and shrunken features. He complained of intense thirst, but the ingestion of the smallest quantity of food provoked copious vomiting of greenish-black fluid which was entirely free from fæcal odour. There was acute pain in the abdomen which was paroxysmal in character. The abdominal walls were flaccid, there was no abdominal distension or tenderness, and the respiratory movements were normal. A few hours later a quantity of bright red fluid blood was passed per rectum. The pain lessened considerably after this, but the patient quickly sank from exhaustion, death taking place within seven hours of admission.

Necropsy.—On post-mortem examination the body was found to be spare and thin, but not emaciated. The abdominal viscera were normal in position. Two feet of the middle part of the ileum were intensely congested, almost black in colour, but not distended. There was a sharp line of demarcation between the diseased and the healthy portions of the bowel, extending into the mesentery along the line of vessels supplying the affected part. There were no signs of peritonitis. On section the intestinal wall was thick and œdematous; the mucous surface was intact. The intestine contained some bloody fluid, similar to that passed before death, but no fæcal matter. The veins in the congested portion of the mesentery were uniformly plugged with firm, dark clotted blood; the corresponding arteries were pervious and healthy. The venous thrombosis did not extend beyond the affected part of the mesentery and no evidence of thrombosis was found in the rest of the venous system, neither could any cause for thrombosis be detected. The rest of the viscera were pale and shrunken, but showed no evidence of disease. The case was apparently one of primary thrombosis of the superior mesenteric veins.

[1] Semaine Médicale, 1897, p. 395.
[2] Transactions of the Clinical Society of London, 1898, vol. xxi., p. 203.
[3] Deutsche Medicinische Wochenschrift, May 26th, 1898.

MONSALL FEVER HOSPITAL, MANCHESTER.

TWO CASES OF PERFORATION OF THE INTESTINE DURING AN ATTACK OF TYPHOID FEVER TREATED BY LAPAROTOMY; ONE RECOVERY.

(Under the care of Dr. R. W. MARSDEN, medical superintendent.)

THERE is no more dangerous complication in typhoid fever than perforation of an ulcer. It is difficult to state with accuracy the mortality from these cases when treated medically, for in most of those in which the patients have recovered after apparent perforation a great doubt must always remain that perforation has not taken place, but we shall not be over-estimating the death-rate in such cases, when not treated surgically, if we put it as at least 90 per cent. Monod and Vauverts[1] have shown conclusively that the mortality in cases treated surgically is certainly less than this. Finney[2] collected 52 cases in which laparotomy was performed, and of these 17 patients recovered. In 1898 there had been recorded 83 cases and 16 recoveries, a mortality of a little over 80 per cent. This is still a high death-rate, but when we consider the low general condition of the patients we are justified in thinking the result good.

CASE 1.—On Nov. 23rd, 1899, a youth, aged 16 years, was admitted into the Monsall Fever Hospital suffering from typhoid fever. He had been ailing for a fortnight and on Nov. 22nd an examination of the blood had shown that it gave the Widal reaction. Clinically the symptoms were distinctive of a moderately severe attack of typhoid fever—i.e., rose spots, enlarged spleen, general bronchitis, a temperature of 104° F., &c.—but the abdomen was soft and free from tumidity, and there was only slight diarrhœa. On Dec. 10th he began to convalesce and the temperature remained normal until the 25th, when a relapse occurred. The relapse was only of moderate severity and was not accompanied by abdominal fulness or diarrhœa, and after 10 days—i.e., on Jan. 4th, 1900—it seemed to be terminating. The general condition of the patient at this time was extremely satisfactory. At 4.30 P.M. on that day, however, he complained of acute cutting pain in the abdomen, which caused the legs to be drawn up and was accompanied by an ineffectual desire to micturate. At 5.30 P.M. the pain was worse, the abdominal muscles were in a state of tonic contraction, and on percussion there was an absence of liver dulness at the ends of the eighth, ninth, and tenth ribs on the right side. The pulse was 83, the temperature was 99·2°, and there was no evidence of "primary shock." At 10.30 P.M. the condition of the abdomen was as described, there being a little fulness, but marked tenderness midway between the umbilicus and the right anterior superior iliac spine. In the interval a greenish fluid had been vomited on three occasions. As the patient was now looking much worse, the eyes being sunken, the pulse 120 and small, the temperature 102·8°, and the respiration of a purely thoracic type, Dr. Marsden decided to perform laparotomy.

The operation was done at 1 A.M. on Jan. 5th, 1900, apparently eight and a half hours after the onset of peritonitis. On opening the peritoneum through a median incision three and a half inches long, a considerable quantity of yellow serous fluid exuded, having a milky appearance from the presence of minute particles of lymph. The intestines were not at all distended—in fact, their walls were quite flaccid and soft. The first loop withdrawn contained a Meckel's diverticulum about one inch in length, and with this excellent landmark there was very little difficulty in finding the perforation, which was situated six inches to the cæcal side of it. It was small, round, about three millimetres in diameter, and, as usual, there was the increased quantity of lymph on the bowel in its immediate neighbourhood. The patches of lymph had a very "curdy" appearance and were readily wiped off. The perforation had occurred in the centre of a greatly thickened patch and had apparently arisen from a progressive ulceration, as there were no signs of sloughing at the edges. There were no peritoneal adhesions—in fact, there was a remarkable absence even of "stickiness" between opposed peritoneal surfaces, and though two and

[1] Revue de Chirurgie, March, 1897.
[2] Annals of Surgery, March, 1897.

a half feet of bowel were examined only one other inflamed patch could be detected through the walls. The perforation was closed by folding inwards and uniting the peritoneum from each side of the patch by means of interrupted Lembert's sutures. A large drainage tube being passed towards the pelvis, the abdominal cavity was thoroughly irrigated with warm saline solution and the operation terminated after lasting 30 minutes. The patient's general condition did not seem to have suffered any deterioration, and with the exception of repeated attacks of vomiting during the next 38 hours the further course was one of uninterrupted progress. The tube, which had been shortened daily, was removed on Jan. 10th as there was no discharge and the wound was allowed to heal. The patient left the hospital apparently perfectly recovered on Feb. 13th.

CASE 2.—A youth, aged 18 years, was admitted into the Monsall Fever Hospital on Jan. 30th, 1900, suffering from a moderately severe attack of typhoid fever. He had been ill for two or three weeks previously and from the above date to Feb. 8th, when the first indications of perforation occurred, there were no signs of improvement. Rose spots were numerous, the temperature continued between 102° and 104° F., the pulse remained about 120 per minute, there was marked general bronchitis, and he was delirious. There was only slight diarrhœa, and the distension of the abdomen, which was considerable on admission, had appreciably diminished. On Feb. 8th, at 8.45 A.M., he complained of pain in the abdomen after defecation, and an examination revealed general tenderness over the hypogastrium, with absence of liver dulness internal to the nipple line. At the same time it was noticed that the respirations were shallow, 44 per minute, and purely thoracic. At 2 P.M. the tenderness was more extensive and the liver dulness was absent internal to the anterior axillary line. The temperature remained steadily between 102° and 103°, but the pulse, which was small and 158 per minute immediately after the onset of the pain, fell to 144 by 4 P.M., so that, the preliminary shock having evidently passed off, Dr. Marsden decided to attempt a laparotomy.

The operation was begun apparently about eight hours after the onset of peritonitis. A median incision was made and on opening the peritoneum a considerable amount of light yellow milky fluid exuded. The bowel was found to be only slightly distended, but much injected, and there were no signs of adhesions between opposed peritoneal surfaces. A considerable length of the ileum had to be eventrated before the perforation could be found, and its situation was again detected by the increased amount of lymph upon the intestine in its neighbourhood. It occupied the centre of a thickened, œdematous patch, and its edges were distinctly sloughy, whilst thin fluid yellow fæces were exuding from the opening. It was closed, as in the former case, by interrupted Lembert's sutures, but owing to the œdematous condition mentioned the peritoneum was very friable, and after three unsuccessful attempts to hold the surfaces together the sutures had to be entered into the outermost part of the thickened area. There was evidence of numerous other inflamed patches in the bowel but there were no signs of another perforation, so that a tube being inserted into the pelvis the peritoneal cavity was irrigated with warm saline solution, and the operation terminated after lasting 35 minutes. At the end of the operation the patient was evidently collapsed, the temperature in the axilla being 98·4°, the extremities cold, and the face and hands slightly cyanotic. He rallied, however, and on the next day (Feb. 9th) seemed to be progressing favourably, but on the 10th he was distinctly worse and he died on the same afternoon 48 hours after the operation.

Remarks by Dr. MARSDEN.—Laparotomy for perforation of the intestine in typhoid fever is still sufficiently in its infancy to call for a record of the various cases in which this treatment is pursued, and the patients who have recovered are sufficiently rare to demand a detailed account of the individual cases in order that reliable statistics may be obtained for future guidance. It is with this object in view that I have ventured to report the above cases. It is impossible to imagine two cases which could better illustrate Keen's[3] statement when he says: "Naturally the cases operated on after relapses or toward the end of the acute febrile attack will result better than those in which the perforation, occurring earlier, requires the patient not only to recover from the operation but to have strength enough to carry him through the fever which has not as yet subsided." In Case 1 the patient was at the end of a relapse and evidently about to convalesce, whereas in Case 2 I think that the fatal termination was undoubtedly almost solely due to the typhoid toxæmia. Moreover, from a consideration of these two cases alone one cannot help concluding that such factors as age, time of operation after perforation, and type of case—i.e., whether a tympanitic abdomen preventing leakage of intestinal contents or a doughy abdomen allowing free extravasation—are insignificant as regards a successful issue compared with the general condition of the patient at the time of the operation.

[3] Complications and Sequels of Typhoid Fever, p. 226.

Medical Societies.

OPHTHALMOLOGICAL SOCIETY.

Occlusion of the Central Retinal Artery on Both Sides.—The Arithmetical Triangle in Ophthalmology.—Dermoid Tumour of the Conjunctiva.—Periarteritis of the Retinal Arteries.—Illustrations of Forest Scenery executed by an Artist after Cataract Extraction.—Ophthalmitis associated with Basal Meningitis.—Exhibition of Cases and Card Specimens.

AN ordinary meeting of this society was held on June 14th, Mr. ANDERSON CRITCHETT, President, being in the chair.

Mr. W. H. JESSOP described a case of Occlusion of Both Central Arteries of the Retina. The patient was a woman, aged 35 years, married nine years, who had no children living. She had had one miscarriage soon after marrying and eight months ago she was delivered of a child at the ninth month which only lived a few hours. On Oct. 24th, 1899, on awaking she found that she could not see with the right eye, although she was quite well at the time and had had no previous illness except an attack of influenza nine years and epistaxis two years back which continued for some weeks. On ophthalmoscopic examination the eye presented the symptoms of embolism of the central artery. There was doubtful perception of light. The left eye was normal. On Dec. 23th, 1899, she suddenly at 11.20 A.M. lost the sight of the left eye, and on examination all the signs of embolism of the central artery were present and there was no perception of light. Both optic discs were now atrophied, the retinal vessels were reduced to mere threads, and in places there was a white thickened condition of the sheath (periarteritis). The vision of the right eye had improved to $\frac{5}{6}$, but with the left there was perception of light only. The patient had been treated with mercury by inunction and internally. The interest of the case was in the arteries of each eye being affected and in the fact that the only symptom and sign pointing to embolus was the suddenness of each attack. No possible source of the emboli could be suggested. This rather pointed to a retinitis being the predisposing cause, and considering the great improvement of the vision under treatment it was probably of syphilitic origin. The changes seen in the vessels pointed to arterial degeneration.—Mr. E. T. COLLINS described the case which he had shown before the society in 1897. The patient also had epistaxis and anfenorrhœa. He suggested the possibility of hæmorrhage into the optic nerve-sheath.—Dr. J. ABERCROMBIE asked if the patient had any uterine disease and suggested that spasm of an artery might last long enough to cause gangrene.—Mr. R. W. DOYNE thought that after embolism the peripheral parts of the retinal vessels were usually somewhat larger than the central portion, and this not being so in Mr. Jessop's case was suggestive of arterial disease as the chief cause of the condition.—Mr. JESSOP, in reply, said that he agreed with Mr. Doyne and also stated that there was no uterine disease.

Mr. C. WRAY read a paper entitled "The Arithmetical Triangle in Ophthalmology: How to Use It and What It Reveals." This method of investigation was a new one and Mr. Wray's plan of using it was as follows. Determine the maximum negative error of refraction and assume provisionally, in accordance with the general law of error, that the positive errors will be equal in amount and frequency. The paper assumed the negative error + 11—that is, 1 D. under E.—and this suggested the use of the twenty-third

line of the triangle, with the result E. = 15 per cent., M. 26 per cent., H. 59 per cent., and myopia over – 6 D. 0.66 per 1000, the minimum number found in any province of France being 1 per 1000 (French army statistics). If the twenty-fifth line were used under the assumption that the commonest refraction is E., then there would be E. 12.2 per cent., M. 43.4 per cent., and H. 48.4 per cent. This would raise the myopes with over – 6 D. far over 14.7, the very highest number that occurred per 1000, and prove E as the commonest refraction impossible. It would appear as though the highest myopia transmissible was – 11 and that the maximum grades were due to non-hereditary causes acting in addition. Mr. Wray deduced that there was no evidence that the effect of civilisation was as serious as it was usually thought, seeing that an increase of 1 D. in the commonest or normal refraction was an impossible and unnecessary hypothesis. Indeed, in that case there would be three cases per 1000 with over 6 D. of myopia from heredity alone, not counting those classed as over 6 D. from such patients generally preferring a – 6.5 lens, spasm of accommodation, &c. Seeing that the maximum is 14.7, very little room is left for the causes that operate seriously in producing acquired myopia.

Mr. SIMEON SNELL (Sheffield) related a case of Congenital Papilloma of the Conjunctiva which occurred in an infant, aged five months. The tumour hung from between the eyelids and fell over the lower lid at about its outer third, the lower part of the growth being enlarged into a rounded ball of about the size of a small pea. It was attached to the conjunctiva about halfway between the corneal margin and the inner canthus, and somewhat broadened out at this attachment. The stalk measured about half an inch, but traction readily lengthened it to an inch. The growth was snipped off with scissors. Mr. Treacher Collins had kindly examined the specimen and he had reported that its microscopical appearances were similar to those of a dermoid cyst of the eye.—Mr. J. GRIFFITH thought that the case should really be called a dermoid tumour, and with this opinion both Mr. COLLINS and Mr. SNELL agreed.

Mr. SIMEON SNELL related a case of Periarteritis of the Retinal Arteries and exhibited an Ophthalmoscopic Drawing. The patient was a woman, aged 43 years, and when first seen the sight in the right eye had been failing for about four months. On ophthalmoscopic examination a peculiar appearance of the arteries on the optic disc was observable. The arteries were encased in a snowy-white and somewhat glistening sheath. This appearance extended only a short distance beyond the optic papilla, and was confined chiefly to the arteries on the expanse of the disc. The vision equalled $\frac{6}{9}$. There was only one small hæmorrhage in the retina but now there were two others on the disc. In the left eye the appearances were very much less marked but the disease was evidently commencing. The vision equalled $\frac{6}{6}$. The urine contained a trace of albumin and there were granular casts. The arteries were rigid and tortuous and there was hypertrophy of the left ventricle. Reference was made to Mules's case recorded in the second volume of the Transactions of the Ophthalmological Society of the United Kingdom, but in the present instance, whilst the changes were confined to the optic disc and its immediate neighbourhood they appeared to be much more pronounced.—Mr. JESSOP asked if the fields of vision were contracted and, in reply, Mr. SNELL stated that such was the case.

Mr. SNELL also exhibited an Illustrated Book on Forest Scenery. The interest attaching to the work was that the illustrations, which were very numerous and of a high-class character, had all been executed by a gentleman, a patient of his, who had several years before undergone extraction of cataract in one eye. The other eye was useless for visual purposes owing to complete cataract. The same gentleman, an amateur artist, had been a successful exhibitor at the Royal Academy, but before the operation his paintings had not been accepted.

Mr. SYDNEY STEPHENSON read notes of a case of Ophthalmitis in a child of seven months associated with Simple Posterior Basic Meningitis. An effusion of lymph into the anterior chamber of one eye was soon followed by closure of the pupil, diminution of tension, and shrinking of the globe. Death took place on the thirty-third day of the disease which was characterised by retraction of the head, convulsions, progressive wasting, and fluctuating temperature. At the necropsy lympho-pus was found on the medulla and surrounding parts and could be traced along the crura, the optic tracts, and the commissure to the left optic nerve. The meningeal exudation was found to contain several micro-organisms including the diplococcus intracellularis meningitidis of Weichselbaum. Microscopically evidences of inflammation were traced from the chiasma and along the optic nerve to the papilla of the inflamed eye. The essential pathological changes in the eyeball itself were neuro-retinitis along with diffuse inflammation of the uveal tract. Mr. Stephenson concluded that inflammation passed from the cerebral meninges along the optic nerve to the eyeball, probably by means of the perivascular lymph sheaths.

The following cases and card specimens were shown:—

Dr. J. ROWAN: Sections of the Healing Stump of an Optic Nerve four days after Enucleation.

Dr. J. HERN: (*a*) A case of Essential Shrinking of the Conjunctiva; (*b*) Persistent Pupillary Membrane; (*c*) case of Abnormally large Cornea and deep Anterior Chamber.

Mr. H. E. JULER: Retinal Detachment with (?) intraocular growth.

BRITISH GYNÆCOLOGICAL SOCIETY.

Exhibition of Specimens.—Indications for the Removal of the Uterine Appendages.

A MEETING of this society was held on June 14th, Dr. W. J. SMYLY, the President, being in the chair.

Dr. W. H. A. NEWNHAM (Bristol) showed a Uterine Myoma removed by Intraperitoneal Hysterectomy from a patient, aged 24 years.

Dr. G. ELDER (Nottingham) showed a Double Ovarian Dermoid Tumour.

Mr. J. FURNEAUX JORDAN (Birmingham) showed Specimens Removed by Vaginal Cœliotomy.

The discussion on a paper by Dr. MACPHERSON LAWRIE upon Indications for the Removal of the Uterine Appendages which was adjourned from the last meeting was opened by a communication from Dr. MACNAUGHTON-JONES, SEN., who was unable to be present. He held that there was unanimity of opinion as to the necessity of removing the appendages in the case of (1) disease of the oviduct, suppurative, cystic, or other, destroying its integrity and obliterating its lumen; (2) in blood cysts both of the ovaries and Fallopian tubes; (3) in solid tumours of the ovary; and (4) in most cases of ectopic gestation. As to the large number of sufferers from reflex troubles and nervous conditions, in which gross changes might or might not be found in the genitalia, it had often been proved that the pathological changes found in the ovaries and tubes, though not apparently of great importance on examination beforehand, had been of a grave character, incurable in their nature and therefore wrong to leave unremoved. On the general question of the removal of the whole or part of the internal genitalia, such removal was not to be considered except (1) where other therapeutical steps had either been tried and proved valueless or the procrastination involved in resorting to them was both directly and indirectly injurious to the woman; and (2) when the risk of operation was less than that of non-interference.

Dr. C. H. F. ROUTH strongly opposed the removal of the uterine appendages, whether the inflammation was suppurative or not. In the former case the plan he advocated was aspiration of the tumour, followed by the injection of iodine. He considered that they had no right to remove the ovaries on account of pain, especially as oöphorectomy altered the frame of the woman's mind and predisposed to insanity.

Dr. G. ELDER (Nottingham) said that none of them doubted the propriety of removing the appendages for pyosalpinx, suppurating ovaries, ectopic gestation, and tumours, and some of them believed in removing the ovaries for myoma in certain cases. But there were grounds for discussion as to the propriety of dealing with non-suppurative diseases such as Dr. Lawrie had described in group "*a*." When the late Mr. Lawson Tait had the inspiration to remove the ovaries and tubes in the case of inflammatory conditions it was a great advance on previous methods. No doubt many ovaries and tubes were subsequently removed that ought to have been allowed to remain. Probably most of those present had removed ovaries which on after-consideration they would have allowed to remain. He was led to reconsider the matter by the fact that in some instances after the removal of the appendages the pain was no better than before. His own practice now in doubtful

cases was to examine the patient under an anæsthetic and, if necessary, make an exploratory incision, dealing with the appendages according to the condition found at the time.

Mr. E. STANMORE BISHOP (Manchester) took exception to some points in the paper—e.g., to the recommendation that a pyosalpinx should be tapped and drained, if by this was meant that the swelling should be aspirated by means of a trocar. A free incision was needed, otherwise the sac would fill up again. Dr. Lawrie had mentioned two classes of cases of myoma where he advocated oöphorectomy—when the myoma was small and the appendages were diseased, and when the patient was much weakened by hæmorrhage. In the first case he presumed that Dr. Lawrie removed the appendages because they were diseased and not on account of the myoma; in the second case, he would point out that the removal of the appendages was often insufficient to control the hæmorrhage. With regard to a second operation, his view was that this was always bad for the patient.

Mr. J. FURNEAUX JORDAN (Birmingham) agreed with the greater part of the paper. He did not think, however, that a conservative reaction could go too far. In one case of pyosalpinx he incised and washed out the tube with a good result. In another case of cystic ovaries he removed one ovary and dealt with the other ovary by ignipuncture and the patient bore a living child 12 months later. He held that the appendages should never be removed unless they were palpably diseased and for the determination of this point an exploratory incision was often valuable. He agreed with Dr. Lawrie's remarks about oöphorectomy for myoma and, contrary to Mr. Stanmore Bishop's views, he held that hysterectomy was easier after a preliminary oöphorectomy, for he had operated under these circumstances in three cases.

Mr. J. BLAND-SUTTON expressed his interest in Dr. Lawrie's paper and said that it was important to observe how much the operation of oöphorectomy had become limited in recent years. From the beginning of his surgical career he had always acted upon one rule—never to remove ovaries and Fallopian tubes unless there was very tangible evidence of disease in these structures. Increased experience had taught him to limit the removal of tubes and ovaries to two sets of conditions—viz., inflammatory lesions and tubal pregnancy. Under the title of inflammatory lesions of the uterine appendages he included chronic salpingitis, pyosalpinx, and hydrosalpinx, and also tuberculous salpingitis. These were the commonest conditions for which double oöphorectomy was required. The extreme frequency of gonorrhœal and post-partum endometritis among hospital patients was in striking contrast to its infrequency among private patients, and this he believed was due to the fact that the poorer harlots took less care of their genitals than the well-to-do courtesans; and that the wives of the poor did not receive the same careful obstetric nursing as the wives of the rich. He had never performed oöphorectomy for the cure of neurotic conditions and he discountenanced removal of ovaries in patients with dysmenorrhœa when there were no obvious physical signs. It was disappointing to find that such a progressive surgeon as Dr. Lawrie still practised the removal of ovaries for the relief of fibroids, but that operation, like the still more unsatisfactory one of double oöphorectomy for the relief of mammary cancer, was rapidly disappearing from the field of legitimate surgery. The results in Dr. Lawrie's series of cases were very satisfactory. Dr. Victor Bonney had drawn up a series of cases in which Mr. Bland-Sutton had performed abdominal oöphorectomy for inflammatory lesions and tubal pregnancy at the Chelsea Hospital for Women since he was appointed surgeon to that institution. The table contained 92 consecutive cases and there were no deaths in the series. This gratifying result was due to the maintenance of thorough asepsis, abstention from irrigation, and the substitution of a strip of sterilised gauze for the drainage-tube. Mr. Bland-Sutton requested that his table of cases should be appended to his remarks when they were published in the society's journal. His results in private practice had been equally successful, but he preferred to publish the table drawn up by an independent person, with the dates and initials of the patients operated upon in a public institution where anyone could examine the records.

Mr. F. BOWREMAN JESSETT thought that Dr. Lawrie's attitude had been misunderstood. It had been assumed that he advocated operation in all cases, whereas he specified that it should be restricted to cases in which other methods had failed. Dr. Mary Dixon Jones had shown that there were cases in which the ovaries presented no enlargement and yet were much diseased, and he imagined that some of Dr. Lawrie's cases came under this category. He thought that the plan advocated by Dr. Routh in the case of pyosalpinx was not without considerable risk.

Mr. SKENE KEITH remarked that he did not believe in removing ovaries from patients who were in perfect health. There was a condition of the ovaries to which no reference had been made, in which the ovary appeared to be healthy on the surface, but on cutting it open there was a thick capsule almost as hard as cartilage. With each recurrence of ovulation much pain must necessarily result and the patient became emaciated; if the general health of the patient was not thus affected it was not time to operate. He did not agree with Mr. Bland-Sutton as to oöphorectomy for myoma; if the whole of the ovaries were removed he would guarantee the cure of the bleeding.

Dr. FREDERICK EDGE (Wolverhampton) said that no doubt the results of conservative operations on the appendages had been disappointing in many cases but they had been equally gratifying in others, and the practical point was to find out in which cases it was well to try conservative methods. It had struck him that the cases where conservative plans had failed were much the same as those in which the removal of the appendages was not followed by full recovery—i.e., the uterus and other pelvic structures were implicated, and either radical removal of the uterus and adnexa should be performed or the case should be left to medical treatment. It was a rule with him to remove the appendages and not to try conservative operation in gonorrhœal cases; but Mr. Taylor had shown that many of these cases had a syphilitic basis, or at least alterative treatment would relieve them.

Mr. CHARLES RYALL pointed out that the tendency to the removal of the ovaries had diminished since it was realised that they had a function of internal secretion which had an effect on the whole system. He believed that oöphorectomy for myoma should be abandoned except in the conditions mentioned by Mr. Furneaux Jordan.

Dr. ARTHUR GILES thought the justifiability of operations such as those grouped together by Dr. Lawrie as class "*a*" must largely depend on their results. If a condition incapacitated a woman and prevented her from earning her living and an operation would restore her to health and usefulness he thought that Dr. Lawrie was right in saying that it was the duty of the surgeon to perform it. They required, however, to know more of the after-histories of these cases. Neurosis was a frequent cause of failure of these as well as of other operations, and he felt that in dealing with a neurotic patient no operation at all should be performed except as a matter of the most absolute necessity. He pointed out that oöphorectomy had failed to relieve hæmorrhage in cases of myoma, not only owing to a portion of ovary being left behind, but also because the operation had been done in some cases where the bleeding was due to a myoma that had become polypoid. When oöphorectomy was contemplated he thought that the cavity of the uterus ought always to be first explored to eliminate this source of failure. The cases of myoma requiring oöphorectomy were now, in his opinion, very few.

Dr. MACPHERSON LAWRIE briefly replied.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases, &c.—Blood-pressure in Sleeplessness and Sleep.—Origin, Development, and Structure of the Umbilical Cord.

THE eighth ordinary meeting of this society was held on June 6th, Dr. A. G. MILLER, the President, being in the chair.

Dr. JAMES CAMERON exhibited a woman, aged 50 years, suffering from Adiposis Dolorosa; a large epigastric pendulous tumour was present.

Mr. C. W. CATHCART exhibited:—1. A boy on whom he had performed Laparotomy for Intestinal Obstruction caused by

an accumulation of foreign bodies in the lumen of the tube, together with the pressure of a calcareous tuberculous gland on the outside. The obstructive material had evidently been eaten in an Italian salad and had undergone no digestion. The boy was not seen until three days subsequent to the onset of obstruction and when operated upon was in a very collapsed condition. 2. A woman from whom he had Excised a Portion of Gangrenous Bowel resulting from a Strangulation of a Femoral Hernia.

Mr. C. W. CATHCART also showed a Surgical Operating Case made in the shape of a box of polished zinc and having a waterproof covering. Such a case was much preferable to the ordinary surgical bag which could not be sterilised. In this case various parts (such as the lid, one side, covers of boxes, &c.) were removable and formed trays for holding the instruments in antiseptic solutions. All the parts were easily sterilised and, moreover, the case was comparatively cheap and compact.

Mr. C. W. CATHCART also showed a portion of the Sigmoid Flexure removed on account of a new growth.

Dr. LEWIS C. BRUCE read a paper on the Blood-pressure in Sleeplessness and Sleep. The instrument employed to estimate the arterial blood-pressure was Barnard and Hill's sphygmometer and the statement of Hill that "the normal general arterial pressure in the horizontal posture equals about 110 mm. of mercury" was assumed to be correct. The first points investigated were: (1) Were there any unusual conditions of blood-pressure which were associated with sleeplessness in mental disease? (2) What changes occurred in the blood-pressure when sleep was induced in these cases by drugs? There were two classes of cases met with: (1) conditions of sleeplessness with high blood-pressure—i.e., above 130 mm. of mercury; and (2) sleeplessness with a low blood-pressure—i.e., below 110 mm. of mercury. The drugs employed to promote sleep were the following: paraldehyde, sulphonal, trional, and bromide of potassium. In the group of cases with a high blood-pressure paraldehyde in large doses (two drachms) was found to be the most certain sleep producer; sulphonal came next in power, and then trional. Bromide of potassium was found to be unsatisfactory. When sleep was induced by any of these drugs the blood-pressure always fell to, or even below, 110 mm. of mercury during sleep. In the second group of cases, sleeplessness with low blood-pressure, paraldehyde in large doses of two drachms acted as a cerebral excitant, tended to raise the blood-pressure, and satisfactory sleep was never obtained. After small doses, however—from 15 to 30 minims—these same patients slept well. In this second class of cases trional in 20 grain doses and then sulphonal were the most satisfactory drugs. Trials were also made of erythrol tetranitrate in doses of one grain per day in cases of insomnia with high blood-pressure, the object being to induce sleep by artificially lowering the blood-pressure. Of nine cases three were immediately and permanently benefited, three were very temporarily relieved, and the remaining three cases were not affected by doses of even two grains per diem. A second series of observations was made upon convalescent patients in order to throw light upon the following questions. 1. Was sleep possible with blood-pressures of 130 mm. of mercury or higher? 2. What relation did the morning blood-pressure bear to the evening pressure when a person was sleeping well? 3. Were there any differences in the blood-pressure of the same person asleep under the action of drugs and during natural sleep? The results were as follows. 1. Sleep was possible with high blood pressures, but the pressure always fell to 110 or about 110 mm. of mercury after the condition of sleep was established. 2. The general blood-pressure was, as a rule, higher in the morning than in the evening in a state of health and the reverse of this held good in some cases of sleeplessness. 3 In the drug sleep induced by paraldehyde the blood-pressure fell at its lowest about 10 mm. of mercury below the habitual blood-pressure of the same person when sleeping naturally. As the effect of the drug passed off the blood-pressure rose and eventually passed to the blood-pressure habitual to that person in natural sleep; in short, drug sleep passed in some cases into natural sleep.—The paper was discussed by Dr. T. S. CLOUSTON, Dr. JAMES FOULIS, Dr. CLAUDE B. KER, Dr. T. RONALDSON, Mr. C. W. CATHCART, and the PRESIDENT, and Dr. BRUCE replied.

Dr. JAMES FOULIS read a paper on the Origin, Development, and Structure of the Umbilical Cord and illustrated it with lantern slides. The object of the communication was to show that the cord itself had no covering of amnion at any period of its existence and that the usual statements in the text-books that the cord had a tubular investment of amnion were entirely wrong, the truth being that the cord proper was always within the amniotic sac and was a tubular prolongation of the somatopleure round the collapsed and shrivelled yelk sac. Numerous micro-photographs of sections of embryos from the deer and sheep were shown in order to illustrate the development of the umbilical cord. The amnion was everywhere continuous with, and an extension of, the somatopleure; and as the somatopleure itself was formed by the union of the epiblast with the somatic mesoblast the amnion was itself an extension of these two membranes and in the micro-photographs the amnion could easily be seen as a double-layered membrane as it passed round the dorsum of the embryo. Before the umbilical cord had an existence as such the amnion could be traced as an outgrowth from the sides of the *bauchstiel* of His, and from the somatopleure around the large umbilical foramen, now widely open. In the early embryo of the deer and sheep there was at first no such structure as the umbilical cord, but the vascular connexion between the embryo and the uterus was in the form of the ventral string of the *bauchstiel*. This *bauchstiel* was an outward growth of mesoblast from the caudal end of the embryo towards the chorion. In its mesoblastic substance were to be found the two large umbilical veins—two umbilical arteries with the allantois which might be traced as a tubular outgrowth from the cloacal end of the primitive intestine and lined with hypoblast. This *bauchstiel*, as the analogue of the true umbilical cord, had a great share in the formation of the cord itself. To trace out the formation of the umbilical cord from the *bauchstiel* was a difficult thing, unless the relation of the somatopleure to the amnion was constantly remembered. Transverse sections of the *bauchstiel* showed that the somatopleure folds, of which for the most part it consisted, gave out on both sides the amnion membrane by simple extension of the somatopleure substance. The caudal fold of the somatopleure gave off the amnion just in the same way as the lateral folds of somatopleure gave it off. The whole dorsal surface of the embryo was thus inclosed within the amnion sac, which was thus attached to the sides of the *bauchstiel* and to the margins of the large umbilical foramen round the collapsing yelk sac. It was important to notice that at the caudal end of the embryo the amnion was attached to, or came off from, the somatopleure at a spot between the under surface of the *bauchstiel* and the anal orifice. At first the *bauchstiel* or ventral string occupied an almost horizontal position as an extension of the caudal end of the embryo; but as soon as fluid began to accumulate within the amnion sac the *bauchstiel* was gradually raised up to an almost vertical position, the amnion coming off from its lateral margins being continuous with the amnion of the lateral somatopleure folds. The distal portion of the allantois gradually collapsed, while that part within the body cavity gradually became the urinary bladder. As a result of the distension of the amniotic sac in all parts by fluid the amnion itself was gradually lifted off the embryo at all parts except at the line of its attachment to the sides of the *bauchstiel* and to the somatopleure folds round the umbilical foramen, which was now closing in round the shrunken yelk sac. The somatic mesoblastic surfaces of the somatopleure were everywhere opposed to each other, and as they actually came in contact they adhered to each other round the yelk sac, thus shutting off the cœlom or body cavity from the false amnion sac. It was most important to bear in mind that this closing in of the somatopleure and the adhesion of its opposed mesoblastic surfaces took place only within the amnion sac, which was thus continuous with, and an extension of, the somatopleure tube thus formed round the yelk sac. No amnion at any time covered the cord or somatopleure tube thus formed, but it was always continuous with this somatopleure tube or umbilical cord at its distal end, and when the true amnion sac became more and more distended the mesoblastic surface of the amnion at last became opposed to the mesoblastic surface of the false amnion, to which it adhered slightly. The amnion thus invariably covered the fœtal surface of the placenta, from which it could be easily stripped off, but, of course, it could not be stripped off the umbilical cord because it was an extension of, and part of, the cord itself.—Dr. D. BERRY HART and others took part in the discussion which followed and Dr. FOULIS replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Cerebro-spinal Meningitis.

A MEETING of this section was held on May 18th, Sir J. W. MOORE, the President, being in the chair.

Dr. H. C. DRURY read a paper on Cases of Epidemic Cerebro-spinal Meningitis. After a brief reference to the past history of the disease from its first recognition in Geneva in 1805 he discussed its pathology and then the etiology, quoting various authorities on the questions of its contagiousness and mode of dissemination. The symptoms more or less important in, or peculiar to, this form of meningitis were then taken *seriatim* and fully discussed, and the means of certain diagnosis by the method of "lumbar puncture" and bacteriological examination were described in detail. Dr. Drury then related eight cases which he had met with in Cork-street Fever Hospital. The first patient, a man, aged 20 years, was admitted on Nov. 18th, 1899, and after a prolonged illness he recovered. Of the other seven patients four died. In only one case was there a rash—a feature so typical of the great Dublin epidemic of 1866–67—and this rash was not petechial, but pustular, with hæmorrhage into the pustules, and it came late in the disease. In all the cases the disease commenced suddenly with rigidity of the neck or actual retraction of the head, and in some cases opisthotonos; all of the patients had deafness in some degree, pain in the head and limbs, and Kernig's sign. One case was mentioned, though not included in the above eight cases, which without bacteriological examination could not have been diagnosed. It was the case of a man, aged 50 years, who had had pneumonia and was up about the ward convalescent for a week when he suddenly developed most marked symptoms of acute meningitis and died on the fourth day. Post-mortem examination revealed pus all over the meninges and a fungous growth on one of the aortic valves. This vegetation and the pus yielded pure cultures of pneumococcus and not the diplococcus intracellularis, though the pathologist (Dr. O'Sullivan) was looking for the latter, being unaware of the previous history of pneumonia.

Dr. A. R. PARSONS read a paper on Cerebro-spinal Meningitis, which was discussed with Dr. Drury's paper.

Dr. N. M. FALKINER presented a table showing the Number of Deaths in the Dublin Registration Area from all forms of Meningitis in the years 1895–1900. Taking the years 1895 to 1899 inclusive the average number of deaths from all forms of meningitis for the first 19 weeks of each year was 102·6, but in 1900 the number of deaths in a corresponding period was 182·0 and the increase embraced ordinary meningitis, tuberculous meningitis, cerebro-spinal meningitis, hydrocephalus, and secondary meningitis. All forms of meningitis should be treated as zymotic diseases. Sir Charles Cameron had adopted the proper course in making meningitis a notifiable disease.

The PRESIDENT remarked that that was the first occasion on which meningitis had been made a notifiable disease. At the Meath Hospital they had had 11 cases with three deaths and eight cases were still under treatment. This showed that the mortality was not at all so high as in the epidemic of 1867. The first case was that of a girl, aged three years, who was admitted on Feb. 24th and who recovered. As to treatment, in the present epidemic he had found that the most successful measures were leeching behind the ear and the repeated application of small blisters behind the ear. The agonising headache was relieved by a combination of acetanilide, caffein, and sodium bicarbonate.

Dr. O'SULLIVAN described the post-mortem appearances in some of the cases. The fluid obtained by lumbar puncture was turbid but colourless. The pus in the spinal region lay in one case altogether outside the spinal dura, the cord being quite firm and apparently healthy. In the other cases it lay in the meshes of or underneath the pia mater and the cord was softened. In the brain the pus was in all cases in or under the pia-arachnoid. The distribution of the pus on the surface of the brain was very symmetrical. In all cases the cerebro-spinal fluid was greatly increased in quantity and was turbid, but it was not bloody or (to the naked eye) purulent. The diplococcus intracellularis was found in the turbid fluid and in the pus, usually in pure culture. It grew best on Löffler's serum, but also on glycerine agar, and less actively on ordinary agar. In the pus the organisms were seen in the pus cells, usually in small numbers, as diplococci with their adjacent surfaces flattened, varying a good deal in size and depth of staining. They did not stain by Gram's method. Inoculation experiments were unsuccessful.

Professor E. J. MCWEENEY said that the first case which had come under his notice was that of a schoolgirl who died in the Mater Misericordiæ Hospital early in February. There was an accumulation of thick mucoid pus symmetrically placed in the posterior cornu of each lateral ventricle. Microscopical examination of the material at once revealed the intracellular diplococcus. In all the cases which he had subsequently examined post mortem the same features recurred: occurrence of actual suppuration, the pus being very tough and mucoid; symmetrical disposition of the lesions on each side of the brain; distension of the lateral ventricles with turbid fluid; implication of the sides and back of the cord; and paucity of the intracellular cocci in the fibrinous exudation on the membranes. In working with cultures of the organism care should be exercised, for three German observers had all contracted severe rhinitis and in the case of one there was some stiffness of the neck as well. This would seem to indicate a slight affection of the spinal meninges and if the observation were accurate it would serve to show that the path by which the infective matter enters the cranial cavity is through the nose—possibly then through the cribriform plate. There was a disease of horses, known in Germany as Borna's disease, in which the essential lesion was a cerebro-spinal meningitis. Intracellular cocci had been found in the pus and it seemed quite possible that the disease might prove to be identical with human cerebro-spinal meningitis. He had heard that numerous cases had lately been observed in horses about Dublin and this was of interest in connexion with the present epidemic amongst human beings.

Dr. TRAVERS SMITH, Professor F. H. BENNETT, Dr. J. KNOTT, and Dr. J. CRAIG also discussed the papers.

BRITISH ORTHOPÆDIC SOCIETY.—A meeting of this society was held at the Orthopædic Hospital, Bristol, on May 19th.—Mr. A. H. Tubby read a paper on the Treatment of Spinal Abscess. He advocated the opening of the abscess as soon as it approached the surface by two incisions as far apart as possible; its thorough evacuation, and scraping or rubbing of the lining membrane; irrigation with iodoform solution, paroleine, or menthol; and closure of the incisions.—Mr. Noble Smith advocated incision and drainage and frequent irrigation.—Mr. Jackson Clarke, Mr. W. H. Harsant, and Mr. J. Ewens also spoke, and Mr. Tubby replied.—Mr. T. Carwardine opened a discussion on the Treatment of Severe Congenital Equino Varus. He divided cases into four groups: (1) severe at birth, (2) severe in childhood, (3) in adolescents, and (4) in adults. Treatment should begin early. Constant personal attention was required and persistence in after-treatment. In rigid cases of the third and fourth degrees manipulation alone was not enough. Tenotomy and the gradual method with apparatus needed patience and perseverance for six or twelve months. Wrenching was suitable in patients aged five years and upwards, but it was unsurgical and its results were temporary. Free subcutaneous section was too severe for young children. The skin was usually too tight to allow of correction. Phelps's operation was therefore better. With respect to tarsotomy and tarsectomy he said that Phelps's original operation did not correct the deformity of the bones, and it made a large wound which took a long time to heal with subsequent contraction. The result of astragalectomy was immediate and little after-treatment was needed, but it had ended in suppuration and amputation in some cases. Cuneiform tarsectomy corrected the varus deformity and saved time and trouble and expensive after-treatment, but it was a mutilating method and it prevented the gradual method being employed afterwards. It shortened the foot and destroyed the arch, interfered with growth, and left a stumpy inelastic foot. It treated the effect on the outer side rather than the cause on the inner side of the foot. Phelps's latest operation had the following advantages. It saved time; bony mutilation was slight, plantigrade progression was immediate; the foot was not shortened, nor was its elasticity impaired; the ankle and tarsal joints were not interfered with and their mobility was

preserved; being a less severe form of tarsectomy it was applicable to younger patients; it could not appreciably interfere with growth: and it treated the foot at the point of anatomical deformity.—Mr. Ewens, Mr. Little, Mr. Thomas, Mr. Jackson Clarke, Mr. Tubby, Mr. Noble Smith, and Mr. Harsant took part in the discussion, and Mr. Carwardine replied.—Cases were shown by Mr. Ewens and Mr. A. F. Blagg.

Reviews and Notices of Books.

Ulcer of the Stomach and Duodenum and its Consequences. By SAMUEL FENWICK, M.D. St. And., F.R.C.P. Lond., Consulting Physician to the London Hospital; and W. SOLTAU FENWICK, M.D., M.R.C.P. Lond., Senior Physician to the London Temperance Hospital, Physician to the Evelina Hospital for Sick Children. London: J. & A. Churchill. 1900. Pp. 392. Price 10*s.* 6*d.*

THE morbid condition known as ulcer of the stomach is so frequently met with and its diagnosis and treatment present so many points of doubt and difficulty that a monograph on the subject from such a well-known authority on diseases of the digestive tract as Dr. Fenwick will be sure of a welcome from medical men. He has been assisted in the preparation of the book by his son, Dr. W. Soltau Fenwick.

The work is divided into four parts. The first part deals with the Pathology and Etiology of Gastric and Duodenal Ulcer. The chapter on Morbid Anatomy contains a very full account of the various changes found in the walls of the stomach when ulceration has occurred, and numerous reproductions of photographs of morbid specimens of ulcer of the stomach materially add to the value of the descriptive letter-press. The authors have taken considerable pains in the elaboration of their conclusions respecting the morbid anatomy; the material was derived from the post-mortem records of 1015 cases of ulcer of the stomach and of 130 cases of ulcer of the duodenum. In order to avoid the errors that are apt to arise from the collection of isolated examples of the disease the authors wisely confined themselves to the records of hospital cases. One of the principal features of the analysis of the cases is the distinction which is made between the acute and chronic forms of the complaint as regards their origin, appearances, and modes of termination. Some of the points drawn attention to in this respect are interesting. For instance, the relative frequency of acute and chronic ulcers in different regions of the stomach. Out of 39 cases of acute ulcers 13 (33·3 per cent.) occurred in the pyloric zone, whilst out of 70 cases of chronic ulcers no less than 53 (75·7 per cent.) were found in that region.

The chapter on the Results of Ulceration contains a large amount of useful information. Attention will naturally be paid to the remarks on hæmorrhage and perforation. Considering the wide area of destruction wrought by a chronic ulcer and the extreme vascularity of the stomach, it seems surprising at first sight that only about 18 per cent. of the fatal cases die from hæmorrhage. The authors therefore remind the reader that not only is liability to bleeding minimised to a great extent by obliterative inflammation and thrombosis of the vessels in the immediate neighbourhood of the disease, but that any rent in their walls is rapidly closed by the contraction of the muscular coat and the coagulation of the blood at the seat of puncture. It is probable, therefore, that in every case of fatal hæmorrhage one or more of the following conditions will be present: (1) non-obliteration of the vessel previously to its erosion; (2) insufficient contractility of its muscular coat; (3) deficient coagulation of the blood; and (4) an abnormally high tension in the arterial or venous system of the organ.

The effects of perforation of the stomach and duodenum are treated in an able manner. The pathogenesis of ulcer of the stomach has always been open to doubt. Many theories have been from time to time advanced, but no single one has been universally accepted, and the remark of the late Dr. H. Gawen Sutton in his lectures to the students at the London Hospital will probably commend itself to the majority of practitioners: "When asked, 'What is the cause of simple ulcer of the stomach?' say, 'I don't know.'" The authors of the work under consideration enter fully into the many views which have been expressed, for there are few subjects in pathology that have given rise to more discussion than the mode of production of a gastric ulcer; and finally they state that although our knowledge concerning the causation of gastric ulcer is still very imperfect certain facts warrant us in coming to the following conclusions. An acute ulcer of the stomach or duodenum may either appear as a primary affection or develop during the course of some organic or constitutional affection. Acute primary ulceration often commences as a hæmorrhage into the inner coats of the stomach during the hyperæmia which takes place at each menstrual epoch and under other conditions. Chronic ulcer of the stomach or duodenum may follow the acute disease in young women or commence by the superficial digestion of a portion of the mucous membrane, where vitality has been diminished by certain conditions, such as obliteration of a nutrient vessel by atheromatous, fatty, lardaceous, or syphilitic disease, chronic inflammation of the mucous and submucous tissues, local anæmia of the gastric wall from pressure, or fibroid or fatty degeneration of the mucous membrane such as occurs spontaneously after the age of 40 years.

The second part of the book contains a description of the symptoms, varieties, and treatment of acute ulceration of the stomach and duodenum. The separation of gastric ulcer into two varieties—acute and chronic—is certainly to be commended, as without this classification confusion has arisen in differentiating many clinical varieties of the complaint according to the exceptional prominence of some particular symptom. If this pathological basis be accepted the clinical sub-division is unnecessary. The account of the symptomatology and of the treatment is clearly and concisely written, and the style adopted is one calculated to attract the attention of the reader. The surgical treatment of perforation has been frequently carried out and the authors have collected the statistics of a large number of cases so treated. The results show that the operation depends for its success or failure upon three factors: 1. The time which is permitted to elapse between the occurrence of the perforation and the performance of laparotomy. The earlier the operation is performed the greater will be the chance of its success. 2. The treatment of the hole in the stomach—it is absolutely necessary that the perforation should be closed. 3. The care with which the peritoneum is cleansed. After a careful study of the reported cases the authors believe that in course of time the early performance of laparotomy, combined with skilful closure of the perforation and thorough cleansing of the peritoneum, will render the surgical treatment of perforated gastric ulcer one of the most successful operations of its kind.

The third part of the book deals with the symptomatology of the ordinary chronic ulcer. Five varieties are differentiated and the difficulties involved in their prognosis, diagnosis, and treatment are discussed. The classification is based on clinical grounds, according to the special predominance of some particular symptom such as pain, vomiting, dyspepsia, hæmorrhage, and cachexia. The chapter on Diagnosis is particularly well designed, and the introduction of tables summing up the points to be relied upon in differential diagnosis is to be commended.

The final portion of the volume is devoted to the different sequelæ of ulceration. In most text-books these have hitherto received less notice than they deserve. Special attention is directed to the effects of perigastric adhesions, to the deformities of the stomach that ensue from the cicatrisation of the ulcer, and to the various internal fistulæ. A full account is also given of such subjects as perigastric and peridnodenal abscess, tetany and other nervous disorders, cancer, tuberculosis, pernicious anæmia, gastric catarrh, and hypersecretion. With regard to the latter complaint the belief is expressed that the excessive secretion of gastric juice is only a reflex result of the irritation produced by the presence of the ulcer, and reasons are given for believing that the so-called "disease of Reichmann," or gastrosuccborrhœa, instead of being a primary functional disorder of the stomach, is merely a consequence of the retention of the gastric contents in certain forms of pyloric obstruction. The arguments adduced in favour of this view are sound and we believe the authors' theory to be the correct one.

We were much interested in a study of this work and we can cordially recommend it to the attention of our readers.

Twentieth Century Practice: an International Encyclopedia of Modern Medical Science by Leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In 20 Volumes. Vol. XIX.—Malaria and Micro-organisms. London: Sampson Low, Marston, and Company, Limited. 1900. Price 30s.

THE ardent way in which researches of a subtle, refined, and minute character have been pursued of late into all that relates to malaria and malarial disease, the discoveries that have been already made, and the promise of others which have yet to come, have combined to make up one of the most interesting—we might almost say romantic—stories in the history of scientific investigation on a miniature scale. The results, moreover, of our rapid progress in this direction, interesting and suggestive as they are, have this practical advantage—that they are not merely circumscribed within the limits of the scientific terms in which they are expressed, but have a very practical significance which may turn out to be capable of wide application and of the utmost value to humanity.

Having once got hold of a clue to the explanation of the nature and causes of the varied phenomena of malarial fever in man, the meaning of which had hitherto seemed so puzzling and mysterious, inquirers were naturally impelled to follow it up to a logical conclusion by tracing out the life-history of the parasitic micro-organism which is at the root of the whole matter, in order to see how it effected an entrance into the human system and, further, how this could be practically prevented.

Since Laveran in 1880 discovered the malarial parasite and opened out, as it were, an almost new zoological field of observation, the subject has been keenly investigated by numerous scientific workers, among whom the names of Golgi, Marchiafava, Bignami, Grassi, and Celli, of the Italian school, and of MacCallum, Manson, Ross, Koch, and others, will at once occur to such of our readers as have interested themselves in this special branch of natural history. More light and experimental observation are now wanted to determine the nature, and still more the extent, of the rôle played by the mosquito as a vehicle for the conveyance and spread of the malarial parasite.

The simple enumeration of the names of the contributors to this volume dealing with malaria and micro-organisms suffices to show that the subjects have been entrusted to worthy hands. Their names are Professor Bignami and Professor Marchiafava of the University of Rome, Professor Simon Flexner of the University of Pennsylvania, and Eugene L. Opie of the Johns Hopkins University at Baltimore, the section on Micro-organisms being by Professor Flexner. The contributions on Malaria by Marchiafava and Bignami are, it should be added, illustrated by a number of excellent plates. There is no need, even were it possible within the limits of a review, to deal with all the points connected with malaria. These are discussed with an elaboration of detail which leaves little to be desired. After a brief historical sketch and a reference to the parasitology of the subject, the life cycle of the malarial parasite in man in connexion with the different forms and varieties of malarial fever and the life cycle of the parasite in mosquitoes, the hæmosporidia of birds and mammals, the mode of entrance of the parasites into the human organism, the malarial environment and the general and special pathology of malarial disease are severally discussed, and a description of the varieties, complications, and sequelæ of malarial disease from a clinical and therapeutical point of view follows.

Biological researches in relation to health and disease have revolutionised our views in many respects all along the line of medical science, but this has been especially the case in regard to malaria and malarial disease. The danger now is, perhaps, lest the rising of a new and possibly partial truth should be accompanied by the setting or obscuring of some older ones. The progress of discoveries regarding the malarial parasite has been so rapid that we can quite appreciate the force of what the authors say in their introduction—namely, that it has been found necessary to re-write entire sections of their contributions and to change others. Those on Parasitology and Etiology, in particular, have had to be greatly modified as a result of the latest researches. A special section has been devoted to the subject of Tropical Malaria, and the consideration of Hæmoglobinuria has been included in the treatise. There are some descriptions of the rarer and more pernicious forms of climatic or malarial fever with which probably only those medical officers who have served a good deal abroad are acquainted. Some of the most acute and severe attacks of these forms of fever resemble Asiatic cholera so closely that they might easily be mistaken for that disease.

We may refer our readers to Dr. Patrick Manson's lecture on Malaria and the Malarial Parasite, published in THE LANCET of May 19th, 1900 (p. 1417) for much interesting and instructive information as to the position which the subject holds at the present time.

We have left ourselves very little room to speak of the section devoted to Micro-organisms, contributed by Professor Simon Flexner of Philadelphia, which occupies nearly 300 pages of the present volume. The article takes a comprehensive view of the subject and is very carefully and lucidly written and illustrated.

Speaking generally of the nineteenth volume of the Twentieth Century Practice of Medicine we may say that it forms an admirably executed treatise on the subjects with which it deals. Its contributors are men of high scientific repute and are well qualified for the task which they have undertaken, and they seem to have done their best to make the fulfilment of it as complete and up-to-date as practicable. The volume will remain for a long time a valuable book of reference in connexion with the subjects of which it treats.

Atlas und Grundriss der Lehre vom Geburtsakt und der Operativen Geburtshilfe. (*Atlas and Outlines of Labour and Operative Midwifery.*) By Dr. OSCAR SCHAEFFER. Fifth enlarged edition. With 16 coloured plates and 139 illustrations. Munich: T. F. Lehmann. 1900. Pp. 197. Price 8 marks.

THIS book consists of two parts with an atlas appended. The first part treats of the mechanism and the management of labour and the second part of the various obstetrical

operations. The mechanism of labour is well described and the author has happily combined the theoretical and clinical portion, so that at the end of the description of each of the stages in the mechanism the student is told what conditions he would find present on making an examination at that particular time.

The first chapter deals with the so-called natural presentations—viz., the vertex, the face, and the breech. In the second chapter abnormal varieties of the natural presentations are described, such as Naegele's and Litzmann's obliquity in vertex presentation, transverse position of the head in vertex and face presentations, and spontaneous evolution in shoulder presentations. Unnatural presentations—e.g., cross and shoulder and other varieties—are considered in Chapter III. In the second half of the book the various obstetrical operations with their indication and methods of performance are described. The atlas consists of some 120 drawings which serve as an excellent series of illustrations to the text, in which constant reference is made to them. The coloured plates, which have been drawn from a study of frozen sections and of the conditions actually met with at the bedside, are good and accurate, as are also the illustrations in the letterpress. The illustrations in the atlas can hardly be considered artistic and, indeed, in some cases they are not anatomically or clinically accurate. They are, however, really not much more than diagrams and they fully serve their purpose as diagrammatic illustrations of the various points discussed. A little more care might have been expended upon the correction of the proofs. Misprints are frequent and all the references in the text to the figures in the atlas after about figure 60 are erroneous. The book has reached a fifth edition in Germany and contains a greater amount of information upon the subjects of which it treats than many a larger and more pretentious work.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary meeting of the Council was held on June 14th, the President, Sir WILLIAM MAC CORMAC, Bart., K.C.V.O., being in the chair.

The PRESIDENT submitted a list of persons of distinction to whom the Centenary Committee recommended that invitations to the Centenary dinner should be sent. The list was approved. The following examiners were elected:—

Elementary Biology.—P. T. Bowman Beale, F. G. Parsons, T. W. Shore, and T. G. Stevens.

Anatomy under the Conjoint Board.—Stanley Boyd, W. Bruce Clarke, A. Robinson, and A. Thomson.

Physiology under the Conjoint Board.—J. Rose Bradford, G. A. Buckmaster, and L. E. Hill.

Anatomy for the Fellowship.—J. Ernest Lane, B. G. A. Moynihan, F. G. Parsons, and A. H. Young.

Physiology for the Fellowship.—T. G. Brodie, W. D. Halliburton, D'Arcy Power, and W. H. Thompson.

Midwifery under the Conjoint Board.—W. R. Dakin, W. S. A. Griffith, A. H. N. Lewers, and H. R. Spencer.

Diploma of Public Health.—Part I.: Christopher Childs. Part II.: S. A. M. Copeman.

INTERNATIONAL CONGRESS OF ELECTROLOGY AND MEDICAL RADIOLOGY.

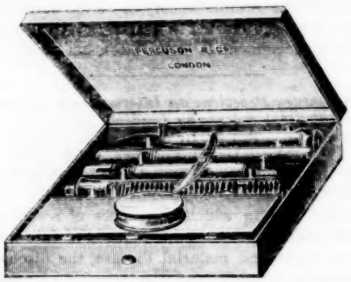
THE Organising Committee of the above Congress wish to inform those who purpose to attend the Congress that a reduction of 50 per cent. will be made for their tickets on the following French railway systems—namely, those of the west, the north, the east, the Paris-Lyons-Mediterranean, the Orleans, and the State. Reductions varying with the length of the journey will also be granted by the Italian railways, of from 30 to 50 per cent. Those who are going to attend the Congress and who desire to avail themselves of these privileges are requested to apply to the General Secretary, M. Doumer, 57, Rue Nicholas-Leblanc, Lille, before July 1st, 1900.

The committee also desire to inform intending members of the Congress that their tickets of membership confer upon them the right of free entry to the Paris Exhibition as long as the Congress lasts.

New Inventions.

AN ASEPTIC VACCINATION CASE.

THE illustration represents an aseptic vaccination case made for me by Messrs. Ferguson and Co., of Giltspur-street, London, E.C., which I think might be useful to public vaccinators, as it fulfils the requirements of the last Vaccination Act and it is so small that it can be carried in the

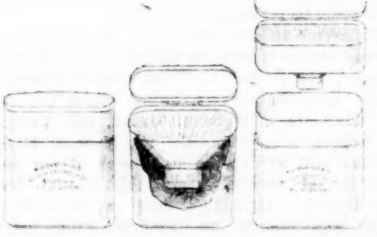


waistcoat pocket. The outside measurements are—3¼ inches by 2¾ inches by ¾ inch. The contents are—(1) spirit lamp, (2) tube of one-grain soloids of mercuric iodide (Burroughs, Wellcome, and Co.) for cleansing the skin, (3) aseptic vaccinator, (4) metal case for lymph tubes, and (5) blower. The vaccination pads can be carried in a separate case.

CHARLES CORBEN, M.R.C.S. Eng., L.R.C.P. Lond.
Caldicot, Chepstow.

A PORTABLE SPITTOON.

THE spittoon, three views of which are given in the accompanying illustrations, has been designed by Mr. W. Harrison Martindale of No. 10, New Cavendish-street, W., and is intended for the use of phthisical patients whose sputum is liable to disseminate the disease unless special precautions are taken. As will be seen, the spittoon is made in two separable parts, the larger one being the container and the



other one consisting of the funnel and lid. Being entirely of sheet metal it has a neat appearance, is not liable to be injured, and can be readily cleaned and sterilised by boiling. It is of a convenient size for the pocket, being three and a quarter inches high and two and three-quarter inches wide, or it may stand on a table beside the patient's chair or bed. The lid will, of course, generally be closed, but can be easily raised with the thumb of the hand which holds the spittoon. Some disinfectant should be used in the spittoon, and for this purpose bottles containing small tablets of thymol are supplied. The price of the spittoon is 6*s.* 6*d.*

THE LANCET.

LONDON: SATURDAY, JUNE 23, 1900.

A CASE which was tried this week in London before Mr. Justice PHILLIMORE and a common jury affords a striking example of the dangers which beset a medical man in the performance of his duty—dangers, moreover, which he cannot avoid save by shirking responsibilities not only towards his patients but towards the public at large. The action was brought by a man named SOPER, employed as a coachman, against Dr. J. H. GIBSON and Dr. W. M. YOUNG (practising in partnership in Maida-vale) under the following circumstances. The plaintiff consulted Dr. GIBSON who was medical officer of a club of which the plaintiff was a member. He was in a state of great mental depression because his wife had become pregnant, and the responsibilities of the future alarmed him. At the same time, according to the evidence of the two defendants, the wife of the plaintiff informed them that her husband had threatened to murder both her and her children and that "he had made up his mind to end it." One of the defendants, Dr. YOUNG, enjoyed the peculiar advantage in dealing with such a case of 15 years' experience in a county asylum. He went to the plaintiff's house and carefully examined him, when the plaintiff said, among other things, that he "heard voices which prevented him from sleeping." Dr. YOUNG, satisfied as to his condition and finding the wife still alarmed, thereupon himself communicated with the relieving officer, who eventually removed the plaintiff to the lunacy ward of the workhouse infirmary. From this institution SOPER was, according to his own evidence—which does not appear to have been supported by that of any medical man connected with the workhouse or of any other person—discharged as sane after three days' detention. He brought his action in respect of this detention, alleging that it was due to professional negligence on the part of the defendants that he had been sent to the lunacy ward of the workhouse and claiming as for "false imprisonment." In answer to the plaintiff the two defendants gave their version of what occurred, while Dr. J. F. WOODS (medical superintendent of the Hoxton House Asylum) and Mr. W. RAYNER (visiting medical officer to the Marylebone Workhouse) gave testimony in corroboration. Their evidence was to the effect that the facts as stated by the defendants showed that the case was one of suicidal mania and that the defendants had acted most properly and in the plaintiff's interest, while they further explained to the jury the possibility of rapid recovery from acute suicidal mania. Dr. WOODS cited an instance that had come under his personal observation in which a patient so affected became sane after two days' confinement. The case, as summed up to the jury by Mr. Justice PHILLIMORE, resolved itself into the answer to a comparatively simple question—whether the two medical gentlemen who were brought to the court as defendants, in coming to the conclusion that the plaintiff was in a dangerous state and in communicating with the relieving officer, had acted negligently. To this the jury found the only answer that 12 sensible citizens could find, and their verdict for the defendants relieved Dr. GIBSON and Dr. YOUNG of the danger of being mulcted in damages. The verdict was endorsed by a judgment in behalf of the defendants "with costs." This means that of their expenses in defending the suit a portion, cut down to a minimum by the taxing master, will be due to them from the plaintiff who may or may not be able to pay them.

The medical aspects of the case require no discussion. At the time when SOPER left the workhouse infirmary he may have been perfectly sane without this in any way affecting the question of his condition when Dr. YOUNG examined him, as to which we have that gentleman's opinion, and also the evidence of a letter from the plaintiff in which he wrote: "Fate is against me ..... future happiness and good health seem out of the question for me," clearly showing his melancholic condition. But the story forms another example of the extraordinarily difficult position that is occupied by the medical man in affairs of this sort. Any medical man may at any time be invited to give an opinion upon the question of a man's sanity. If he honestly believes that there is danger in allowing the patient freedom of action he has one duty only, which is to declare that opinion and give effect to that opinion. By doing this he becomes directly responsible for the confinement of the person whom he believes to be insane and may be subjected to the inconvenience, anxiety, and pecuniary loss inseparable from an action at law when the person whom he has certified as a lunatic finds himself at liberty. This is because there exists no means of testing in such an action the genuineness of the plaintiff's claim until it is brought into court with all the costly accompaniments of solicitors, counsel, witnesses, and court fees, and with the further inevitable circumstances, of great consequence to medical men, of waste of time and a publicity of an unenviable sort. The public must have a remedy no doubt where the medical man is negligent, and the courts should be open to all who have a just claim to prefer, but there must be some defect in our legal machinery to make the comparatively small and poor class of medical men run such risks for the good of the public. We have, perhaps, the most expensive legal system in the world, and it is one which lays all persons who are worth attacking open to the attack of anyone, be his claim just or unjust. And if the claim should be unjust the unfortunate defendants have no remedy. The pecuniary loss to the successful defendants in the case of SOPER *v.* GIBSON and YOUNG will be at least £100, even if the plaintiff is able to pay that proportion of the expenses now due from him in accordance with the verdict. It is a significant fact in this case that the solicitor who represented the plaintiff is the son of the plaintiff's employer; this the wife of the employer admitted when in the witness-box.

IT will be remembered that some few weeks ago considerable sensation was caused by the alleged abduction o

Madame DE MARTEL, widely known under her pen-name of "GYP." The story, as told with circumstantial detail by Madame DE MARTEL, went the round of the press of Europe, meeting everywhere with scant credence. And this was not, and is not, surprising, for undoubtedly it bore upon its face a striking resemblance to the episodes with which popular French romances are besprent, so that many who read the narrative experienced a feeling that what had occurred to the lady was too much like a chapter from one of M. XAVIER DE MONTÉPIN'S interminable and impossible novels to be an episode in real life. In particular medical men were unbelieving, for the invention of such stories by those posing as victims of assaults is a form of hysteria familiar to all of us. Consequently Madame DE MARTEL, though she was able to adduce corroborative testimony to parts of her story, and though her written work displays her as a woman of particular sanity, was very generally condemned as the victim of hallucination or of mad desire for notoriety. Possibly this condemnation was hasty. For M. KARL, the ingenious painter who hoaxed M. Q. DE BEAUREPAIRE so egregiously during the DREYFUS trial, has written to the *Matin* to say that he and three of his friends abducted "GYP" in much the way that she had described to a sceptical public. It appears from M. KARL'S confession that there were concerned in the assault on Madame DE MARTEL a gang of confederates and a complacent *cocher*, and that the drive to the distant suburb, the confinement in the deserted villa, and the escape from the windows of the second story were facts and not the imaginings of a mentally unstable person. If M. KARL'S account is true the reason why Madame DE MARTEL'S adventure looked too like the fictional heroine's misfortune to be credible becomes clear. M. KARL, in describing his method of kidnapping "GYP" has fallen back upon just those literary authorities from whom his victim was suspected of having plagiarised, and while universal opinion was right in refusing to believe the abduction to be a serious outrage it was wrong in attributing imposture to Madame DE MARTEL. If the communication to the *Matin* is untrue—a hypothesis with something to recommend it—the "joyous" KARL, as our contemporary calls him, must himself be in a curious condition of mental balance.

Practical joking is obsolete in this country, and no one of sense, especially no medical man, regrets the manners and sentiments of the time when it was held in consideration as a form of humour. Indeed, the disrepute into which practical joking has fallen may be pointed to without exaggeration as one of the most certain proofs—if proof be needed—that the race has attained to a higher plane of civilisation during the nineteenth century. A hundred years ago the practical joke flourished in England side by side with an elaborate social demeanour, the absence of which we are often called upon to deplore in the present less ceremonious days. But the appreciation bestowed by our grandfathers and their fathers upon practical jokes, however cruel, however dangerous to life and limb, and against whomsoever directed, does much to nullify the fine effect produced by the elegance of their clothes, the loftiness of their sentiments, and the formality of their diction. The callousness which derives amusement from the pain of another is now a subject of reprobation, while the extreme danger to health of many forms of practical joking has been pointed out by the medical profession in terms which have ensured the discontinuance of many favourite tricks. And this is a sign of progress. It proves that we have outgrown the schoolboy desire to inflict misery upon our neighbours that we may enjoy their mortification. Here and there a practical joke may still be tolerated, but it is certain that unless the victim is a man, and a man who has merited rough reproof, the sympathies of the spectators, even in the hilarious environment of a country house-party, will be with the victim. Those who laugh will laugh because they feel that the man who makes an unappreciated joke is in a more melancholy plight than the man against whom the joke is levelled. The position long enjoyed by THEODORE HOOK will not be filled in the twentieth century. HOOK was, as everyone knows, a greater and more honest man than his reputation, but the things that he did two generations ago only, while he was occupying a distinguished place in society and letters, would nowadays ensure his being expelled from his clubs. We have, in fact, put away this childish thing—practical joking, and that we have done so is more significant than a little. It is constantly said that modern life has lost all delicate aroma, the hurry and stress of competition leaving men no leisure to attend to niceties of behaviour. But, as in many an oft-repeated statement, the little piece of truth is outweighed by the general incorrectness. If there is less politeness on the surface now than in Georgian days there is infinitely more true courtesy. The desire to please is as great while the resolve not to give pain is far greater. In the days when practical joking was a favourite form of humour no one was exempt from the ferocity of the fun-maker. A glance at the literature, especially at the novels, of 50 and 60 years ago reveals that to be old, to be ugly, or to be a spinster, were all considered a sufficient reason for ridicule and even for personal assault. Coarse personalities reflected little discredit on the utterers, for a majority could always be found to join in a laugh at the butt. This spirit of cruelty has been largely eliminated in recent days, and as a consequence our estimate of what constitutes good breeding has changed for the better in a remarkable degree, which is the more a subject for congratulation in that it is the habit of the unthinking sweepingly to condemn modern English manners, which are found to be abrupt and only suited to a utilitarian folk. Possibly, but those who speak so forget that an exquisite appreciation of beauty, a gift of mellifluous phrase-making, and a courtesy of manner that is wearisome in its elaboration can exist in the savage breast. For what is the Chinese judged by modern standards but a savage? His centuries of semi-civilisation have never taught him to moderate his cruelty. The subjugation of the childish instinct to give pain is the truest sign of progression in a people. The possession of the fruits of learning and science, so generally acclaimed as proving attainment to a high level of living, is not so true a sign.

France has always, in theory at any rate, been the most finely civilised and gallant of nations. Many things have combined of late to render this view difficult to hold; for

example, the treatment by Frenchmen in certain of their newspapers of our venerable QUEEN and their own conscientious President. But those who have social relations with them will always be found to say that French politicians, whatever views they represent, are never representative of the people, and that French writers, and especially French journalists, appear to take pains to traduce their country. In these circumstances it will be interesting to see what attitude France takes towards M. KARL, supposing that M. KARL'S words are true. When M. KARL befooled M. DE BEAUREPAIRE he shook the world with laughter. The supporters and the adversaries of DREYFUS alike saw the ridiculousness of the position occupied by the ex-judge, and M. KARL leapt into fame. It is possible that the humorist took more credit to himself than he should have done, and that his second attempt has been based upon faulty comprehension of the conditions under which his previous exploit was performed. His opportunity with regard to M. DE BEAUREPAIRE was most fortunate, for that person had laid himself specially open to the punishment that he received, proving himself credulous and ignorant in the precise directions in which he was posing as shrewd and well-informed. No such conditions exist in the case of Madame DE MARTEL, and while it is doubtful whether France will laugh again, for the rest of the world the joke will fall flat. "GYP," like M. DE BEAUREPAIRE, brought trouble upon herself. She, like him, is a vigorous political partisan—"the Eurydice of the Nationalists" M. KARL terms her—and her attitude towards the Jews is as uncompromising as was M. DE BEAUREPAIRE'S towards DREYFUS. But having said this, all that can be urged in extenuation of M. KARL'S cruelty has been said. We find it much too little and we trust that Frenchmen, regardless of politics, of the DREYFUS question, and of the anti-Semitic movement alike, will find it the same. If M. KARL has invented the story of the abduction he has been willing to exhibit himself as a complete anachronism and not a funny one. If he has done what he says that he has done, he should be severely punished. For practical joking is a danger and a nuisance to society that should not be tolerated.

DR. DANFORD THOMAS, coroner for Central London and Middlesex, has drawn up a series of questions relative to the cause of death in cases in which a patient has died presumably owing to an anæsthetic. In England inquests are always held in the case of such fatalities, while in Scotland the law does not deem a special inquiry necessary if the medical man in charge of the case can give a satisfactory statement that the death was not due to gross carelessness or unprofessional conduct. The questions which Dr. DANFORD THOMAS has formulated deal with the choice of the anæsthetic, the place in which it was given, and all the circumstances attending the administration, such as the temperature of the room, the condition of the patient, and the nature and duration of the anæsthetic. They further request the medical man who gave the anæsthetic to state in how many cases he has given anæsthetics, how much air was allowed to mix with the narcotic vapour, the quantity of the drug used, and by what method it was given. The phenomena associated with the induction and continuance of anæsthesia, and attending the death of the patient, are also inquired into, as well as the general state of the patient with regard to the heart, lungs, kidneys, and other organs before the operation. The questions are extremely useful as a guide for the scientific inquiry into such sad occurrences as deaths under anæsthetics, but whether it is at all possible, or indeed desirable, to attempt in a coroner's court to enter so fully into the details of purely medical questions we venture to express a doubt. It is assuredly the function of the court to ascertain whether an individual died from, we will say, an overdose of chloroform through inexpertness or malpraxis of the administrator, but it seems to us that this end may be obtained without placing before the jury purely medical facts, which are not always within their purview, or, in some instances, within that of the coroner himself. The public attending such courts as well as the jury are not, as a rule, skilled in questions of anæsthetics, and might certainly receive false impressions if the technical medical statements contained in the report were presented in detail as evidence in the case. Even experts reading answers to Dr. DANFORD THOMAS'S queries might arrive at very diverse decisions. While one might condemn the method which his neighbour extolled, many might find a cause of death quite other than that which the administrator believed to be the true one. It is at least an ordeal for any medical man to appear in the coroner's court, having first suffered the mental shock incident to losing a patient under an anæsthetic, when he has done his best according to his lights for that patient. If to this be added a searching inquiry into the scientific questions involved, with possibly a severe heckling from jurymen whose want of technical knowledge is often apt to induce misunderstanding of scientific facts and to confuse the issues, the medical witness will hardly welcome the innovation suggested.

We may not unreasonably expect that Dr. DANFORD THOMAS will regard such reports as "private and confidential" *communiqués*, and that the evidence thus collected will result in the ascertaining of facts and details which will be of scientific interest and benefit to those employed in the administration of anæsthetics. Provided that such inquiries are conducted by medical coroners and the statements made by the medical witness are given purely for the guidance of the coroner and not for that of the jury, we think that Dr. DANFORD THOMAS'S schedule of questions is to be welcomed. But unfortunately all coroners are not medical and we cannot quite see of what use the questions, which are of a highly technical medical nature, would be in the hands of legal coroners. Certainly the suggestion now under consideration appears to us to add one more to the many reasons why in all cases coroners' inquiries should be conducted by medical men and not by lawyers.

GIFT TO BLYTH.—Sir Matthew White Ridley, the Home Secretary, who is lord of the manor, has given land of some extent to the Blyth District Council for a park for the use of the inhabitants of the seaport.

Annotations.

"Ne quid nimis."

THE METROPOLITAN HOSPITAL SUNDAY FUND.

WE publish in another column a letter from the Lord Mayor urging on the public of London in terms of admirable directness the absolute necessity of contributing this year to the utmost of their power to the Metropolitan Hospital Sunday Fund. His lordship evidently feels that there is reason for apprehension that the very heavy calls which have been made during the past nine months of war and suffering upon the public purse may influence in an unfortunate manner the subscriptions to the Fund. In our Special Suppement in behalf of the Fund issued last week we spoke of the position in much the same terms. We admitted that the demands upon the benevolent had been so very heavy that the Fund might this year find itself in difficulties, and to the best of our power we urged upon the public the true view—viz., that a year of national suffering is a year when this Fund requires more than ever all the pecuniary assistance that the public can afford. The Lord Mayor boldly asks the public to send him £100,000, that is to say rather more than double the average annual total of the Fund. It will be an event of almost national importance if the sum he asks for is obtained. The Fund has started splendidly. Mr. George Herring, whose great generosity to the Fund we have chronicled on previous occasions, has given towards this ideal total of £100,000 no less than £10,000, and has also promised to give £10,000 more if the sum of £90,000 is raised. In the name of the suffering poor of London we thank Mr. Herring for his splendid munificence and we trust that the necessary subscribers will come forward to deplete his open purse of the second donation. We beg our readers to remember that next Sunday is Hospital Sunday, and we hope that they will impress the fact upon all whom they can influence.

DOWLING *v.* DODS.

IN the Queen's Bench Division, before Mr. Justice Darling and a common jury, Miss Agnes Dowling, a certificated nurse, sued Mr. Louis Ferdinand Dods, L.S.A., a medical practitioner residing in Marylebone, to recover damages for libel. The alleged libel consisted in a letter which the defendant had published and written to the relieving officer of the Paddington district in which he certified that to the best of his knowledge and belief the plaintiff was of unsound mind. The letter also stated that the plaintiff had passed an examination at the Apothecaries' Hall for certification as a dispenser, and that in her present frame of mind this constituted a danger to the community. He had interviewed sundry people who agreed as to her insanity and were afraid of her. The plaintiff gave evidence in support of her case and was cross-examined by Mr. Hammond Chambers. She said that she had been an inmate of the House of the Holy Cross in Ladbroke-square and admitted that she had written several letters to the nurses. To Sister St. Clair, the assistant matron, she had written, "When I was on night duty and sleeping at your home you kept me awake often, and made me write letters to you at Fulham." That, she said, was by telepathy. She also said, "You tried to take my soul from me with your diabolical practices. ..... You took possession of my mind, you could read most of my thoughts, you threw me down in the streets one day because you did not approve of them." This she accounted for by "thought body" phenomena. In reply to the judge the plaintiff admitted that when she was in Ireland she distinctly heard Dr. Groves's voice. He was at the time in the Isle of Wight. Mr. Dods gave evidence as to seeing the plaintiff with Mr. Farrar, a tutor whose lectures she attended at Westbourne Park-road. He had seen plaintiff in Mr. Farrar's house waving her arms about and talking to herself. He wrote the letter in the plaintiff's interest. Mr. Farrar gave evidence of eccentric behaviour on the part of the plaintiff, and Miss Matilda Ashby, matron of the Holy Cross Society, a Roman Catholic institution for training nurses, said that the behaviour of the plaintiff while in the home was very strange. Mr. Justice Darling, in the course of his summing-up, read passages from the plaintiff's letters to Miss Ashby which, in his opinion, justified the defendant's statement that persons went in terror of their lives on account of the plaintiff. He held that the letter was privileged, but left the following questions to the jury:—1. Did the defendant write to the relieving officer without malice and *bonâ fide* believing that the statements were true. 2. Were the statements true? 3. Did the defendant act in good faith and with reasonable care in the manner in which he brought the matter before the relieving officer? The jury answered the first and third questions in the negative and assessed the damages at £100. With regard to the second question, the jury found that the defendant had not spoken truly in stating that the plaintiff was of unsound mind, that it was not true that the plaintiff had sent threatening letters, that it was not true that she would be a source of danger as a dispenser. It was true, however, that she had hallucinations. Judgment was therefore entered for the plaintiff. To our minds the finding of the jury is remarkable. We can see no evidence to show that Mr. Dods did not act in good faith, and plaintiff was admitted by the jury to have hallucinations. A dispenser who has hallucinations is, we should say, by no means unlikely to make disastrous mistakes. Suppose, for instance, that a prescription recommended salicylate of soda and the dispenser heard a voice from the Isle of Wight recommending the substitution of arsenic? It must be remembered, too, that Miss Dowling could not have been committed to a lunatic asylum on the strength of Mr. Dods's letter. That letter was only the commencement of a possible inquiry into the plaintiff's state of mind.

THE ALDERSHOT FIELD DAY.

AFTER the expressions of regret that have been made regarding the recent catastrophe at Aldershot and the desire which evidently exists to lose no opportunity of preventing any similar disaster in the future we might be presumed to be able to rest content. But we regret to say that we cannot regard the result of what had previously taken place in the House of Commons and the statement of the Under-Secretary for War as to its causes as altogether satisfactory. Apart from the loss of life and the suffering that were entailed, such occurrences cannot tend to popularise the army, which is what the Government and everybody else are desirous should be done at the present time. While we quite admit that the going astray of carts containing refreshments was a very unfortunate accident on the occasion in question and that the sudden accession of an exceptionally hot and close day could not have been foreseen, we nevertheless consider that under such circumstances it would have been prudent either to postpone altogether or to curtail the time of the intended military operations. This is not, however, the question which concerns us now. What the public has a right to expect is that the military authorities, with all the experience which they have had of field days, military manœuvres, and marches in and around Aldershot, should be able to show that all practicable precautions are taken against occurrences of this

kind. It is no doubt not advisable, even were it practicable, to depart from a system of decentralisation by taking out of the hands of the local military authorities the duty and responsibility of making adequate arrangements on occasions of this sort. We cannot see, however, how these arrangements can be considered adequate so long as soldiers about to take part in a long and trying field day are not provided before starting with a more substantial breakfast than they seem to get at present, together with means of obtaining light refreshment and an abundance of fluid *en route* and during halts. We know, as a matter of fact, that sportsmen and civilians take care to secure a good breakfast before commencing any unwonted exertion, and if the existing regulations do not admit of this being done on field days in the case of the soldier the War Office should issue the necessary authority and incur the cost of having it done. It goes without saying, too, that the men should be protected from the sun and the heat by suitable clothing and head-dress and by marching in as open order as possible. The so-called forage or field service cap is quite unsuitable for such occasions; either helmets should be worn or, what would probably be preferable, the slouched form of head-dress used by the colonial troops should be adopted by our infantry soldiers. But it is of little use merely to protect the head against the direct rays of the sun so long as the danger from heat exhaustion arising from insufficient nourishment and fatigue be not also guarded against. It is often a matter of emulation with corps to "force the pace" in marching back to camp after a field day and it was on the return march that the soldiers, overcome with heat and fatigue, fell out in such numbers, and it is at such a time, therefore, that extra care should be taken.

THE ROYAL SOCIETY (SECOND) ANNUAL CONVERSAZIONE.

THE exhibition held by the Royal Society on June 20th, although containing very little of an entirely novel character, yet fully maintained the high standard it has reached in recent years. It frequently happens that the second or June conversazione, generally known as "ladies' night," is more or less a repetition of the one given in May. This year, however, we are glad to find that this is by no means the case, many fresh subjects of interest being brought forward. An able demonstration of an apparatus for the production of short electric waves and the study of electro-optic phenomena was given by Dr. J. A. Fleming, F.R.S. A beam of electric radiation was produced by a radiator, the wave length being about eight inches. External radiation is prevented by enclosing the instrument in a zinc box. The receiver is of the Branly type and is connected with a relay and an electric bell to indicate the impact of electric waves. Dr. Fleming showed that the latter could penetrate ordinary insulating screens but were at once stopped by those made of metal. Damp objects, such as a wet duster, a moist brick, or the human body, were quite impervious. The refraction of these waves was also cleverly shown by turning the radiator out of the horizontal plane when the receiver bell gave no indication until a prism of paraffin wax or a grating of parallel wire held at an angle diverted the rays into the aperture of the receiver. The spectra of the inert gases of the atmosphere were exhibited by Professor W. Ramsay, F.R.S., and Dr. M. W. Travers, who have now succeeded in thoroughly separating no less than five constituents from atmospheric nitrogen—viz., helium, neon, argon, krypton, and xenon, spectra of these five gases in a pure state being on view. It is interesting to notice that krypton with an atomic weight of about 80·54 comes close to bromine in the Periodic Law, whilst xenon again, with an atomic weight of 128, is close to iodine. An ingenious apparatus for the preparation of these gases in the pure state was also shown. It consists mainly of mercury levelling tubes, by means of which atmospheric air is driven into a tube, cooled by liquid air, and thereby compelled to condense. Diminution of pressure then causes the highest boiling liquid to vaporise away from the others, thereby practically bringing about fractional distillation of the gases present. The photographic observations of the solar eclipse of May 28th formed the interesting exhibit of the Joint Eclipse Committee of the Royal and Astronomical Societies. Many positives and negatives of the various stages of the eclipse were on view and naturally many of the corona. Ordinary and chromosphere spectra of the latter were also shown, and among other attractive items in this collection were some striking paintings by Mr. Wyllie, the well-known marine artist, of incidents which he witnessed whilst accompanying the official expedition. Dr. William J. S. Lockyer showed some clever photographs of bright and dark lightning flashes, the effects being purely photographic, probably caused by several sparks of varying intensity taking place at the same time. The poisonous lotus of Egypt (*Lotus Arabicus*) was shown by Professor Wyndham Dunstan, F.R.S. This very curious plant possesses the property of being extremely poisonous to animals in its living condition from the formation of prussic acid due to the action of water on a glucoside it contains, an enzyme present converting the latter into this poison and a yellow colouring matter, *loto flavin*. When, however, the plant is cut down and dried it becomes a most useful fodder and possesses an odour closely resembling fresh hay. Dr. W. J. Russell, F.R.S., showed some pictures on copper developed by iodine after contact with printer's ink and also after exposure to hydrogen peroxide. Some ancient cameos and gems dating back to the second or first century B.C. were exhibited by Sir John Evans, K.C.B., F.R.S., and some of the Roman remains from Silchester by Mr. W. Gowland. The latter included some fragments of the hearths of two of the old cupellation furnaces saturated with lead and copper oxide during the extraction of silver from argentiferous copper. Some very good experiments were performed by Professor Hele-Shaw, F.R.S., and Mr. Hay on stream line motion analogous to lines of magnetic induction. They exhibited a specially constructed glass plate by means of which a large number of results may be obtained with very little trouble suitable for both educational and research work. Last, but not least, Professor E. Ray Lankester, F.R.S., showed two ingenious models of mosquitoes enlarged 28 times linear and some models of human blood-corpuscles infested with the malaria parasite.

UNFOUNDED CHARGES AGAINST THE CARDIFF INFIRMARY.

THE working men of Cardiff and the colliers of the surrounding districts subscribe about £1000 per annum in support of the Cardiff Infirmary, not by any means a large amount when compared with the sums raised on Hospital Saturday in other large towns, Birmingham for instance. But if the Cardiff workmen are grudging in pecuniary support they are only too ready to bring against the staff of the institution charges which are of the most trivial nature and which will not bear even the most superficial examination. The latest instance occurred last week when at a meeting of the working-men governors it was stated that a collier who had met with an accident was sent by the colliery surgeon to the infirmary and that although he had a subscriber's ticket he was sent home without having his injury attended to. Such is the statement which appeared in the Cardiff daily papers of June 12th. The actual facts are these. A collier in one of the Rhondda valley collieries badly crushed three of his

fingers and was attended immediately by Mr. Edwards, the colliery surgeon, who was of opinion that with proper treatment the whole hand would be saved. At the end of two days the man suggested that he should see one of the Cardiff Infirmary surgeons and Mr. Edwards readily acquiesced. Upon presenting himself at the out-patients' room of the infirmary Dr. P. Rhys Griffiths made a careful examination of the injured hand and came to the same conclusion as the colliery surgeon, that there was no necessity to amputate any of the fingers, and after having the hand dressed he wrote to Mr. Edwards giving expression to his views as to the mode of treatment to be followed. It is thus evident that instead of receiving scant courtesy, as the working-man governor would have his colleagues believe, this particular patient received exceptionally good treatment at the hands of the infirmary surgeon. It is a great pity that such charges as these should not be investigated before finding their way into the daily papers and not after. Those who bring them must surely see that even the interval of the couple of days which must elapse before explanation is possible may be long enough to do a considerable injury to the institution whose interests we are convinced they have really at heart.

MARRIAGES BETWEEN PERSONS OF THE SAME SEX.

THE determination of the sex of a new-born child with malformed genital organs must often be a matter of considerable difficulty. With the advance of years and the advent of puberty the changes which take place in the body and the development of secondary sexual characters usually enable a correct diagnosis to be made. It would seem hardly credible that individuals could grow up and even enter the marriage state without their exact sex ever having been determined. In two articles of great interest in the *Revue de Gynécologie et de Chirurgie Abdominale*, March–April, 1899, and January–February, 1900, Dr. François Neugebauer has collected notes of no less than 53 cases of marriage between persons of the same sex. He has also collected from the literature 11 cases in which marriage engagements were broken off on the discovery of an error having been made in the sex of one or other of the parties, and 15 cases of "women" living a life of prostitution who were in reality of the male sex. A careful examination by a competent observer will rarely fail to determine with certainty the sex of a new-born child, but in many cases the matter is left to the judgment of the attendant nurse or midwife, who has not a sufficient knowledge of the various kinds of malformation of the genital organs to enable her to come to a correct conclusion. The unfortunate consequences that may result from an error are illustrated by Dr. Neugebauer's cases and by the fact that two unhappy victims of such a mistake were driven to commit suicide. In the 53 cases recorded, in 49 a man had been married as a woman, in three cases a woman had been married as a man, while in one the person was said to be an hermaphrodite. The majority of the cases of the men appear to have been very evident cases of peno-scrotal hypospadias. Some of these cases, however, even when examined by trained observers, cannot be decided upon with absolute certainty unless a microscopical examination of the supposed ovaries or testes is possible. The legal relations of the correct determination of the sex of a new-born child may be of the greatest possible importance. The question of the right of succession or inheritance to landed estate or to an estate limited by entailment may depend upon a correct appreciation of the preponderance of one or the other sex in the case of an hermaphrodite. If the subject of such a malformation die a short time after birth the rights of other people may rest to a large extent upon the decision of the medical attendant in the matter of the exact sex. In such cases no conclusion should be come to without the most complete post-mortem examination and if necessary a microscopical examination of the sexual glands. The law in France with regard to the nullity of marriage between two persons of the same sex differs from that in this country. If the person married is a malformed woman incapable of sexual intercourse then according to the French law no ground exists for declaring the marriage void. Such a condition is, however, recognised by English law as a sufficient cause for annulling the contract. If, on the other hand, the person is a malformed man there can have been no legal marriage and it is of necessity null and void. If the case is one of an hermaphrodite then nullity of marriage must exist since whatever the sex of the other contracting party there must be identity of sex between the two persons. In view of the grave results that may ensue cases of doubtful sex should be investigated with the greatest care, and in all cases where any doubt remains the child should be brought up and educated as a male.

THE COLONIAL SURGEONS IN ASHANTI.

THE dangers which are at present threatening our countrymen in the West Coast of Africa have a special interest for the medical profession from the fact that of the 26 Europeans whom the revolted Ashantis are believed to have surrounded in Coomassie no fewer than six are in the Colonial Medical Service. Under the most favourable conditions these gentlemen have very arduous and responsible positions, and the climate in which they live is proverbially one of the most fatal in the world for white men. At present they are in a most critical position, shut up in a native town far from the sea and with no immediate prospect of being relieved. These victims to duty, with whom we have to express the utmost sympathy, are Mr. Patrick Joseph Garland, senior assistant colonial surgeon, Gold Coast, Mr. Edward Herbert Tweedy, Mr. Albert John Chalmers, M.D. Vict., Mr. William Medlycott Graham, M.B. Dub., and Mr. J. B. Hay, M.B. Edin., assistant colonial surgeons, Gold Coast, the sixth being Mr. W. F. Macfarlane, assistant colonial surgeon, Lagos. All will unite in hoping that communication with Coomassie may be soon restored and the Europeans enabled to make their way to the sea-coast.

THE RATING OF SCIENTIFIC INSTITUTIONS.

THE Jenner Institute of Preventive Medicine has recently attempted to obtain exemption from the payment of rates and has failed to do so on its case coming before a Divisional Court. The ground of its claim to be excused was that the Jenner Institute came under the Act of Parliament passed in 1843 which exempts "any society instituted for purposes of science, literature, or the fine arts exclusively," provided that such society fulfils certain other conditions. It was not contested that the Jenner Institute did not fulfil these or that it was not instituted for purposes of science, but its difficulty arose from the application of the word "exclusively." It is, of course, well known to our readers that the Jenner Institute is not only responsible for much scientific investigation and research but also that it manufactures and sells antitoxin, mallein, tuberculin, and similar preparations for the benefit of members of the medical profession who are glad to be able to obtain them from such a source. It was not suggested to the Divisional Court that it carries on a profitable business in this respect; indeed, it was admitted that some of the preparations named were sold at a loss to the institute. The judges, however, held that giving full weight to the word "exclusively" in the Act under consideration they were bound to consider the appellants liable, Mr. Justice Channell

saying that "one of the objects of the appellants was no doubt the promotion of science, but one and probably the main object was to dispense to the public the benefits of science." We do not quite follow the distinction thus drawn which we cite from the *Times* report of the case, and we should have thought that "the dispensing of the benefits of science" to the public should hardly, according to the spirit of the Act, impose a liability from which a society not so dispensing them would be exempt, but we do not wish to re-argue a case which no doubt will shortly be re-argued to the full in the two courts which still remain open to it. We would rather protest against scientific societies having either to submit to taxation or to expend their revenues in claiming the protection of an Act of Parliament passed more than half a century ago and so vague in its terms that even now the interpretation of its provisoes is wholly uncertain, while such institutions as general hospitals might well have been included in its scope had they not at the time of its passing and for many years afterwards been universally deemed to be under no obligation to pay rates. In justification of what we have said as to the uncertainty and consequent cost of such an appeal as the Jenner Institute seems to have undertaken we need only point to the history of two more or less recent appeals under the same section which were cited in the course of argument in the Divisional Court and which we select at random. In the one case the Institution of Civil Engineers was the appellant. The Divisional Court decided against it. On its appealing to the Court of Appeal the decision of that tribunal was in its favour by a majority, one out of the three Lords of Appeal dissenting from the other two. In the House of Lords the Institution was again successful, but again one judge out of three—the Lord Chancellor, to wit—was against it and it succeeded by a bare majority only. In the other case the Art Union of London was the appellant. The Divisional Court decided against it; the Court of Appeal was in its favour, being, however, again divided in the proportion of two judges against one; and the House of Lords eventually reversed the decision of the Court of Appeal and held the Art Union liable. It is possible that the law on the subject of exemption from rates may have been rendered clearer by these two decisions and may be clearer still by the time the Jenner Institute has secured another from the House of Lords, but it seems time to amend, or to replace with a modern one, an old statute passed two generations ago which is still fraught with expensive litigation for the very institutions whose revenues it was passed to economise and which omits from its purview others equally deserving protection.

IRISH UNIVERSITY EDUCATION.

ALL Irishmen are naturally fond of discussion, and at the present time university education provides them with a most congenial subject, so that the question is constantly arising and the number of views put forward as solutions of the matter illustrates the proverb, "*Tot homines quot sententiæ.*" Here is the latest. At the yearly meeting of the Assembly of the Presbyterian Church in Ireland, held in Dublin on June 8th, the convener of the Committee on Higher Education strongly commended as an equitable solution of the university question "the nationalisation of Trinity College," by which was meant that the theological degrees, as well as the degrees in arts and other faculties (medicine, law, &c.), should become the property and privilege of the whole nation. According to this utopian scheme the Ulster Faculty—the six Presbyterian theological professors in Belfast and the three in Derry—should undertake the conducting of classes in Trinity College, Dublin, by availing themselves of the Trinity term that lies outside their own session. What the unfortunate professors in arts, law, and medicine of Queen's College, Belfast, or the arts professors of Derry would do under this scheme is apparently not worth considering. It need hardly be said that such a settlement—as the interesting debate showed, when it was broached—would be unworkable. In the first place, no statesman of any party would attempt to interfere with Trinity College, nor does any true Irishman wish to destroy the prestige and glory of a university the traditions of which go back to the days of Queen Elizabeth; secondly, it would be absurd to expect other educational bodies to join Trinity College unless on terms of absolute equality on the governing senate, as well as in other matters—a condition which Trinity College would never yield; and, finally, such a proposal as the nationalisation of Trinity College would in no way satisfy the Roman Catholic Church in Ireland, and the problem, as far as it is concerned, would be as acute as ever. The proposal to nationalise Trinity College is, therefore, as useless as it is impracticable.

THE LATE MRS. GLADSTONE.

ON June 14th Catherine Gladstone, the wife of perhaps the most notable statesman of the expiring century, passed from sleep into death. She was in her eighty-ninth year and no transit from this world to the next could have been more peaceful. Nearly all the members of her family were present—a family as devoted to their mother as she to them and to any one of whom the exquisite lines of Pope might apply—

> "Me, let the tender office long engage,
> To rock the cradle of reposing age,
> With lenient arts extend a mother's breath,
> Make languor smile and smooth the bed of death,
> Explore the thought, explain the asking eye,
> And keep awhile one parent from the sky."

To the deceased lady the medical profession owes a great debt in that she was the pioneer of the free convalescent home movement. It grew out of the distress caused by the cholera epidemic of 1866 which forced upon her attention the necessity for such institutions. She appealed to the public and generous donations were sent in including one of £1000 from the Queen. The first home was opened at Snaresbrook, but it was transferred in 1869 to Woodford. From the beginning she set her face against granting to subscribers any privileges in the way of "letters" or nomination of patients, and this opinion was endorsed at a great meeting held at the Mansion House in 1876, where Mr. Gladstone spoke.[1] This of course is the way in which any charity should be worked, but we fear that such a method needs the personal magnetism of a Gladstone to make it generally feasible. No better memorial could be raised to the memory of her who has gone than for one of the large London hospitals which has not already done so to do away with subscribers' letters.

RESULTS OF THE TREATMENT OF GRAVES'S DISEASE BY REMOVAL OF THE THYROID GLAND.

G. REMBACH contributes to the *Deutsche Medicinische Wochenschrift* of April 26th, 1900, a concise and very instructive review of the cases treated by removal of the thyroid gland in exophthalmic goitre. Nearly a decade has passed since Mikulicz of Buda-Pesth operated on his first case of Graves's (Basedow's) disease, and the final results are very gratifying to record. All the clinical symptoms of a disagreeable and distressing nature (palpitations, attacks of giddiness and of confusion, flushings and feelings of heat), have been entirely, or almost entirely, removed by the operation and the patients have been able to pursue their usual occupations and to enjoy their lives which before were wearisome and wretched. A

[1] THE LANCET, April 1st, 1876, p. 507.

review is given of 18 cases which had thus been operated on with beneficial results. It may be mentioned that resection of the thyroid gland was successfully performed in 13 cases and enucleation in three cases. Bilateral resection was found necessary in six cases, and in four of these it was completed at one sitting. The arteries supplying the thyroid gland were ligatured in five cases. Microscopic examinations were made of the excised glands, but the changes found were slight and variable. No constant pathological basis could be discovered, so that, apart from the view generally entertained that the gland is in a state of hyperplasia and over-activity in this disease, no specific statement on the pathology of the disease could be put forward.

THE QUESTION OF HORSE AMBULANCES.

OUR recent reference to horse ambulances has stimulated afresh interest in this important question, and among the correspondence relating to the matter which has reached us is a note from the Hon. F. Dudley Leigh calling our attention to an article from his pen in the *Nineteenth Century* for October, 1896. The author succinctly sketches the work that has been done in this direction in other countries; his descriptions of the celerity with which the American ambulances start out, picking up a surgeon on the way, being as thrilling as an account of the almost instantaneous receipt of a call and the turn-out of the New York Fire Brigade. Mr. Leigh concludes his paper with suggestions that various public bodies might interest themselves in the question, pointing out that our hospitals are too overburdened already in the matter of finance to take up the matter themselves. It is certainly to be regretted that, in an age when every possible effort is apparently being made to alleviate suffering, London should be behindhand in providing that rapid means of transport in the case of accidents which is provided not only in America and on the continent but also, we are happy to know, in Belfast, in Bolton, in Oldham, and which will soon, we trust, be provided in Manchester. Oxford, too, as will be seen from a letter in another part of THE LANCET, has done something towards providing transport of the kind in question. Surely if the matter were taken in hand by some responsible body there would be no lack of funds for the wiping out of what is now a blot upon our city.

THE PLUMBERS' REGISTRATION BILL.

IT is satisfactory to notice that our contemporary the *Daily Express* is making an effort to arouse public interest with regard to the importance of sound plumbers' work. This is the more opportune as that much-neglected measure, the Plumbers' Registration Bill, will shortly be again before the notice of Parliament. It may be that the lack of general interest exhibited towards this Bill by Members of the House is more apparent than real, but it would seem to exercise a heavy narcotic influence whenever it is introduced. Some measure of control over men operating as plumbers is surely needful; this is more particularly the case when, under the present conditions of the building trade, such work is undertaken by employers whose ostensible avocations by no means guarantee their ability to direct their workmen in the intricacies of their craft. Probably not half the workmen engaged in plumbing work are employed by master plumbers. Any man calling himself a builder, as well as ironmongers, gasfitters, stores, or universal providers are gradually wresting the trade from the master plumber. The employés suffer from this, the men having to a large extent to pick up a knowledge of their trade as best they can, the old system of apprenticeship rapidly becoming extinct with the decadence of the master plumber. The powers for evil that repose in the hands of these men have been frequently pointed out in the pages of THE LANCET. The disastrous effects that arise from their callousness or ignorance are constantly presenting themselves to our notice. The best men are all anxious for registration; it is only those who could well be spared from the trade who are inclined to reject it.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MR. J. A. BLOXAM, senior surgeon to Charing-cross Hospital, having decided to become a candidate for a seat on the Council of the Royal College of Surgeons of England, Mr. John H. Morgan has withdrawn his name from the list of candidates.

CAMBRIDGE SUMMER SCHOOL OF MEDICINE FOR QUALIFIED PRACTITIONERS.

WE have already given some details as to the Cambridge Summer School of Medicine which it was intended to hold from June 25th to June 30th. Demonstrations of the malarial and other blood parasites and of all the most recent work on cancer had been arranged for, while in addition to these subjects lectures were to have been given by experts in their several lines of work upon various other matters of medical and surgical interest. We regret, however, to have to announce that owing to the small number of acceptances it has been decided not to hold the meeting. The response with which the offer has met with this year is all the more disappointing after the enthusiasm and gratitude of the visitors at the last meeting five years ago and we learn that the offer will not be made again.

MEDICAL MEN AND HOSPITAL BOARDS.

FROM time to time we have to record differences of opinion between the board of management and the medical board of the same hospital. When, therefore, we find evidence of great cordiality between the two boards it affords us much gratification to chronicle the same. The board of management of the Wigan Infirmary at the first meeting of the new board appointed Mr. William Berry, the senior honorary surgeon and secretary of the medical board, to be chairman of the general board for the ensuing year. That a medical officer of an institution should have been appointed to such a high post as the chairmanship of the general board of that institution is not only a high compliment to the medical profession but also a tangible proof that the working of the Wigan Infirmary is conducted upon the most harmonious principles and therefore upon the system calculated to give the best results both for the patients and for the supporters by whose generosity the needful funds are found. Wigan has set an example worthy of general imitation, and we offer those concerned in this happy procedure our warmest congratulations.

EPSOM COLLEGE: THE WAKLEY PRIZE.

ON June 16th the Council of Epsom College, on the occasion of their annual visit, awarded the prize for "Elocution" to the Senior Prefect, Mr. Colin Giffard, whose renderings of a portion of "Lear" previously "set," and of an extract from "The Spectator," which he had not previously seen, were equally excellent. To the same student was also adjudicated the "Wakley Prize." This prize is the result of a collection made by the friends of the late Thomas Wakley. The amount collected was invested and the dividends provide the funds for the prize in perpetuation of the memory of the Founder of THE LANCET. The prize is awarded to "the best fellow all round" by the votes of the boys in Upper and Middle School; on the present occasion the majority of votes gained was, we understand, the largest on record, whilst the endorsement of the staff was unanimous. The fact that a boy holding the

responsible post of Senior Prefect should have succeeded in winning so completely the approbation of the staff and the affection and confidence of his fellow-students implies the possession of a combination of qualities which we trust will stand him equally in good stead in his future career. Founder's Day will be held on Saturday, July 28th.

THE PATHOLOGICAL SOCIETY OF LONDON.

A NEW departure in the form of an extra meeting held in the Pathological Laboratory of the New Museums at Cambridge will bring the present session of the Pathological Society to a close. By the kind invitation of Professor G. Sims Woodhead the meeting will take place at 4 P.M. on Saturday, June 30th, at Cambridge. A list of the communications will be published in our Diary on Friday next. Members will be able to obtain dinner in hall at Trinity Hall at 6.30 P.M., so as to enable them to catch the 8.40 P.M. train back to town.

THE President and Council of the Medical Graduates' College and Polyclinic are issuing invitations for a conversazione to be held at the College, 22, Chenies-street, W.C., on Wednesday, July 4th. The reception by the President will take place at 8 P.M. and an address—subject, "The Teaching of Practical Medicine"—will be delivered by Professor Osler, F.R.S., of Baltimore, at 9 P.M. All inquiries should be addressed to the medical superintendent of the College, 22, Chenies-street, W.C.

THE Society of Arts Albert Medal for the present year has, with the approval of H.R.H. the Prince of Wales, president of the society, been awarded to Mr. Henry Wilde, F.R.S., "for the discovery and practical demonstration of the indefinite increase of the magnetic and electric forces from quantities indefinitely small." This principle is the one on which the invention of the modern dynamo machine is based and is employed in all modern dynamos.

THE Caroline Institute of Stockholm has just admitted a lady for the first time to the degree of Doctor of Medicine. Miss Anna Stecksén produced a thesis on the Blastomycetes of Curtis partly from studies under Dr. Roux in the Paris Pasteur Institute, and partly from work carried on in the bacteriological laboratory of the Caroline Institute.

THE governors and medical staff of Guy's Hospital are sending out invitations for a garden party to be held on Wednesday, July 4th, at 3 P.M., on the occasion of the distribution of the medals and prizes to the students by the Earl of Pembroke. The new laboratories, wards, museums, and college will be open from 3 to 5.30 P.M.

MR. C. A. BYNOE, concerning the justice of whose conviction for forgery in 1893 grave doubts have arisen, has applied unsuccessfully to the High Court for a rule *nisi* for a *mandamus* to compel the General Medical Council to hear the application that his name, which had been erased from the Medical Register, might be restored.

IT is an open secret that grave differences have arisen between the board of management and the medical staff of the National Hospital for the Paralysed and Epileptic, Queen-square. The medical staff have now drawn up a statement of their views which has been sent to the Governors of the hospital.

WE regret to learn the death of Mr. Thomas Jones, F.R.C.S. Eng., Professor of Surgery in Owens College, Manchester, and surgeon to the Manchester Royal Infirmary. Mr. Jones was surgeon in charge of the Welsh Hospital at the seat of war and his death is announced from Springfontein.

A TELEGRAM from Sir C. Bruce, Governor of Mauritius, to Mr. Chamberlain, received at the Colonial Office on June 15th, states that no cases of bubonic plague have been reported for the week ending June 14th.

THE annual distribution of prizes to the students of Charing-cross Hospital will take place on Tuesday, June 26th, at 3.30 P.M. The prizes will be distributed by Mr. H. Beerbohm Tree.

A TELEGRAM has been received at the Colonial Office, dated June 18th, stating that 74 cases of bubonic plague occurred in Ceylon last week with 64 deaths.

SIR WILLIAM MACCORMAC will receive the degrees of M.D., M.Ch. honoris causâ in the University of Dublin on Thursday, June 28th.

ROYAL ARMY MEDICAL CORPS SOUTH AFRICA FUND.

PRINCESS CHRISTIAN, the President of the Royal Army Medical Corps South Africa Fund, presided on June 19th at a meeting of the general committee of the Fund, held, by permission of Lady Broadbent, at 84, Brook-street, W. Her Royal Highness, who was attended by Miss Loch, was received by Sir William and Lady Broadbent, Sir Dyce and Lady Duckworth, and Surgeon-General H. S. Muir, Deputy Director-General of the Army Medical Department. Amongst those present were Miss Maxwell Müller, R.C., Lady Dyce Duckworth, Mrs. Anderson, Mrs. Berkeley Hill, Mrs. Ramsden, Mrs. Howard Tooth, Mrs. Jameson, Miss Quain, Mrs. Walsham, Mrs. Butlin, Lady Brunton, Mrs. Percy Kidd, Major and Miss Wilson, Mrs. Charters Symonds, Colonel and Mrs. Frank Howard, Mrs. Muir, Mrs. Thomson, Mrs. Barlow, Lady Savory, Mrs. Moore, Mrs. Hale White, Lady Russell Reynolds, Mrs. Church, Mrs. Pye-Smith, Mrs. Bradford, Mrs. Liveing, Lady Clark, Lady Fayrer, and Mrs. Charlton.

Mrs. CHARTERS SYMONDS (the honorary treasurer) in submitting her report, said: Your Royal Highness, ladies, and gentlemen,—As there may be no other opportunity of informing the committee and subscribers as to the distribution of the Fund, it may be advisable to enter into a few particulars. The total amount received to date is £2266 8*s.* 4*d.*, which may be considered a successful result of our appeal. Messrs. Holt and Company have received £277 10*s.* 9*d.*, and to this firm we are indebted for acting as our bankers. The committee formed in Birmingham have sent £225, and have also written to say that a further collection will be made if required. £50 have been received from the Leeds committee and £38 12*s.* 6*d.* have been received from Scarborough, while the Blackburn committee have contributed £80. The subscriptions sent direct to the treasurer amount to £1029 6*s.*; of this sum it may be added that the bulk was collected by the ladies of the committee and by members of the medical profession; a large sum also was raised by the Royal Army Medical Corps, due to the efforts of active and retired officers and to the wives of several gentlemen at present serving in South Africa. £29 were received from the officers and men of the Royal Army Medical Corps at Malta. We have expended £1495 11*s.* to date, including about £300 on flannel shirts and over £220 on tobacco. We have sent £200 to the principal medical officers in India, who purchased and despatched blankets and puttees to the Indian dhoolie-bearers now serving with the forces in South Africa. Major W. G. A. Bedford, R.A.M.C., secretary to the principal medical officer at Cape Town, has acknowledged the receipt of £200 which he will spend at his discretion and of which he will render an account to us. With regard to the auditing of the accounts Surgeon-General Muir has kindly offered to undertake the duty in

conjunction with some other officer in his department. We have in hand at present a balance of £770 of which probably £120 will be required for rent, packing expenses, and purchases up to the end of July. If we set aside another £50 for pipes and tobacco there will still be left a balance of £600; and one of our objects in meeting here to-day is to consider the best means for utilising this sum for the benefit of the corps whose splendid work in South Africa has been a striking feature throughout the whole campaign. I will leave it to Surgeon-General Muir, to whose courtesy and ready help we owe so much, to suggest the best way of dealing with this amount.

On the motion of Sir DYCE DUCKWORTH the report was adopted.

Surgeon-General H. S. MUIR then read the report of the Executive Committee. He said: Your Royal Highness, ladies and gentlemen,—The circulars which you have received have given particulars of what has been done, but a short recapitulation perhaps is desirable. Mrs. Charlton has been working at Netley, Mrs. Allin at Aldershot, and Mrs. Wilson and Mrs. Exham at Devonport, and several ladies of rank in the provinces have given their assistance. In January a letter was prepared for publication, when Mrs. Charters Symonds wrote to the Director-General of the Army Medical Department offering her kind assistance. This led to the formation of a central committee of ladies in London, and on Feb. 5th a meeting by the kind courtesy of Lady Duckworth was held at 11, Grafton-street, to organise and commence work. Your Royal Highness then graciously consented to be the honorary President. An executive committee was then appointed and an office was opened at 100, Victoria-street, Miss Maxwell Müller kindly undertaking the office of honorary secretary and Mrs. Charters Symonds that of honorary treasurer. Parcels of comforts were sent to the principal medical officer of each division and to all general hospitals for distribution. The work expanded rapidly; numerous gifts in kind began to arrive and the accommodation at Victoria-street proved insufficient for our needs and necessitated our finding the new offices in George-street. This change, however, entailed the loss of the services of Miss Maxwell Müller, who had devoted much time and energy to the work. Mrs. Muir then became honorary secretary, but the secretarial work had become so extensive that it was absolutely necessary to appoint a paid secretary and the executive committee were fortunate in obtaining the services of Miss Bollast. Parcels were now sent to the men at the base depôts, the advanced depôts, on the lines of communication, and to the hospital trains and hospital ships. The army had increased in numbers and new divisions were formed which necessitated the despatch of comforts to new detachments of the corps, which now included Militia and Volunteer Medical Staff Corps. Steps were taken to provide the Indian hospital attendants and dhoolie-bearers with blankets and puttees which were sent direct from Bombay. It was also considered advisable to commence sending a second consignment to the various divisions and hospitals. Upwards of 9000 parcels have now been despatched. The parcel for each man, as a rule, was made up of a flannel shirt, two pairs of socks, two handkerchiefs, a woollen helmet or cap, a muffler, a cholera belt, a pipe and tobacco, a cake of soap, a packet of note-paper, and a pencil. Occasionally some of the following articles were added: Testaments, towels, mittens, chocolate, compressed soup, lime-juice tablets, slippers, cigarettes, buttons, playing-cards, and bootlaces. About 100,000 articles have been despatched, and as a very large number of these were gifts in kind the committee wish to acknowledge these with many thanks. They numbered as follows: 2500 shirts, 3500 cholera belts, 14,000 caps, 3600 bootlaces, 6000 mufflers, 11,000 handkerchiefs, 12,500 pairs of socks, and 1200 pencils. I beg to mention that we are indebted to your Royal Highness for many of these articles. Many articles more suitable to hospital patients than for our purposes were sent to us, probably through misapprehension, but we did our best to forward them to hospitals, so that the generous donors may feel satisfied that the articles were duly used and appreciated. These articles include pyjamas, cushions, nightingales, bed-jackets, eau-de-Cologne, games, and magazines. The kindness of the following ladies must be acknowledged:—Lady Dyce Duckworth, Lady Lauder Brunton, Lady Broadbent, Mrs. Berkeley Hill, Mrs. Barlow, Lady Bertram, Mrs. Pye-Smith, Mrs. F. Taylor, Mrs. Morriston Davies, Mrs. Jameson, Mrs. Macpherson, Mrs. Johnston, Miss Bostock, Miss Wilson, Mrs. Dawson Williams, Mrs. Squire, Mrs. Greer, Miss Verona Brooke, Mrs. Oliver Barnett, Mrs. Clutton, Mrs. Bourke, Mrs. Garrett, Mrs. Steele Perkins, Mrs. Frank Howard, Mrs. Bradford, and Mrs. Forsyth. The packing of the thousands of articles which we have dispatched devolved upon a sub-committee, the members of which arranged amongst themselves as to their attendance daily. The amount of physical energy required to make up 9000 individual parcels has, I need hardly say, been very considerable, and the efforts of these ladies are worthy of the highest praise. I may add that two of the ladies mentioned voluntarily attended every day, wet or fine, and in this connexion I cannot refrain from mentioning the names of Mrs. Meredith and Miss Bowker. Our thanks are also due to the provincial committees who have done good work. Leeds, Birmingham, Liverpool, Scarborough, Blackpool, and Edinburgh have sent gifts both in money and in kind. The meeting has heard from our honorary treasurer that a balance of over £700 remains available. Subscriptions still come in from day to day, but we can hardly expect, unless we make special and earnest appeals, that any large amounts will be received henceforward. Judging from the course of events I think we may, perhaps, conclude that no such appeal will be necessary. At the same time it might be somewhat premature at present, for the reasons I shall now adduce, to declare the Fund closed. From some of the consignees we have heard of the actual receipt of our packages, but not from all. Now, that does not necessarily mean that the packages are absolutely lost, for it was only by the last mail that we heard of the arrival at Estcourt of the bales addressed to No. 7 General Hospital. We know that the traffic on the South African railways has been so congested that thousands and tens of thousands of packages of all sorts have been accumulated at wharves, railway-stations, and storehouses, and from what we learn there has no doubt been a certain amount of stealing. But the Royal Army Medical Corps are no worse off than others in this respect, and we know that hospital stores have been delayed by the more urgent necessity that food-supplies for the fighting line should have precedence. The executive committee therefore propose, with your sanction, to be guided by the information we obtain by successive mails and to send out supplies to those detachments which have been up to now by force of circumstances deprived of them. They consider, however, that it will not be necessary to keep the offices open after the end of July and to obviate the necessity of calling another meeting they propose to publish a report—probably the final one—at a date shortly afterwards, when they will be prepared to make a suggestion as to the disposal of any surplus that may then exist.

Sir WILLIAM BROADBENT moved the adoption of the report, which was agreed to.

Major WILSON moved a vote of thanks to the ladies and others who had given assistance. He said he was receiving now very pathetic letters asking what had become of the Queen's chocolate, and he need hardly assure Her Royal Highness that that matter was being most carefully looked after. It could no longer be said that the Royal Army Medical Corps, who were not a territorial corps, belonged to nobody, for the medical profession had made it their own. At present they had over 4000 men in South Africa, exclusive of the St. John Ambulance Brigade. Not many men had been killed in action, but many had died in hospital principally from the result of infection during attendance upon the sick.

The motion having been agreed to, Sir WILLIAM BROADBENT tendered the thanks of the meeting to Princess Christian for her presence. Princess CHRISTIAN bowed her acknowledgments and the proceedings terminated with a vote of thanks to Sir William and Lady Broadbent for the use of their house.

THE WAR IN SOUTH AFRICA.

ALTHOUGH there is a comparative lull in the military news from South Africa at the present moment all that has recently reached us from the seat of war is eminently satisfactory. Lord Roberts's enveloping and converging columns are slowly but surely sweeping all opposition before them. He has a very large force at his disposal,

but considering the enormous extent and nature of the country which has to be covered and conquered, and the exceptional character of the tactics employed by the Boers, Lord Roberts has not a man too many for his purpose. Whatever might have been the temporary success attributable to the exceptional nature of the methods of the Boers, regular and disciplined troops intelligently led with a definite strategical object in view are bound to succeed eventually in accomplishing it and this is what they are now doing.

According to a recent telegram from Lord Roberts 148 officers and 3039 men of the British prisoners in the hands of the Boers at Pretoria have been released and re-armed by us with weapons captured at that place. Of the above-named, 12 of the officers and 248 of the men are in hospital. About 900 prisoners still remain in the hands of the Boers, having been removed with Mr. Kruger when he left Pretoria on June 4th.

SIR WILLIAM MAC CORMAC AT THE SALTERS' COMPANY.

Sir William MacCormac, Bart., K.C.V.O., was admitted to the honorary freedom of the Salters' Company on Monday last, June 18th. After the proceedings a banquet was held at which Sir William MacCormac made the following interesting speech:—

WORSHIPFUL MASTER, WARDENS, AND CAPTAIN PERCIVAL CLARK,—I am exceedingly sensible and appreciative of the high honour that you, Sirs, and this worshipful and ancient Company, so well known for its benevolence, its charity, and its good works, have this day conferred upon me. When I first heard of your kind intentions in my regard I can assure you that the announcement afforded me the sincerest gratification. I regard it a precious privilege and pleasure that this ancient Company should consider me in some degree fit to follow in the footsteps of such men as Huxley and Hooker and Stokes and Fergusson, who were in their time made honorary freemen of this Company. And now it is time, I think, to express to Captain Percival Clark my sincere gratitude and cordial thanks for the manner in which he has proposed the toast of the new freeman. He has been too kind and too generous to me in what he has told you, especially in what he has said in respect of my going out to the seat of war. I have only done what everyone else has done—tried to help that country of which we are all so proud when she appeared to need our help. There is no particular merit in this—it is only doing one's duty; and when it was represented to me that I could help in South Africa by my advice and the experience I had gained in other fields, when I knew that that advice and assistance would be willingly accepted by the officers of the Royal Army Medical Corps, when I also felt that my position at the head of the surgical profession in this country would add weight to any opinions I might form,—it seemed right for me to go. I felt that if I could tell those at home (and I was happily able to tell them) that all was being done to help their dear ones who were either sick or wounded that human foresight or skill could effect, then I still further and very deeply felt that I ought not to hesitate. War is no doubt a very terrible thing, but national honour and national greatness must be maintained at whatever cost. I have the strongest possible conviction that this war was inevitable, and I am convinced that history will pronounce that our quarrel has been a just one. I have said, and now repeat, that every care has been taken for our sick and wounded. The provision made for them has been unexampled in the history of war and profuse in every way, and the difficulties of transport in this immense territory have been overcome in a manner which is absolutely admirable. We have the field hospitals accompanying the fighting lines and receiving and tending the wounded in a wonderfully short time after they are hurt. We have numerous hospitals along the great lines of communication and the necessary hospital trains, and we have the general hospitals at the base and the many volunteer hospitals which the generous impulses of our people have provided. Besides these we have a fleet of hospital ships equipped with every necessary and every luxury, and we have a large staff of Army Hospital Corps and civilian surgeons and many men and women nurses. I have seen all these organisations and the working of them and can speak without stint in their praise. To mention merely the labour which this entailed I may say that I travelled over 6500 miles. Up to a recent date (June 9th) the state of affairs was the following. There were in South Africa 855 medical men attending the troops—475 officers of the Royal Army Medical Corps and 380 civil surgeons. The female nurses numbered 666 and the male nurses numbered 5668. There were 27½ field hospitals, with 100 beds in each and accommodating 2750 patients; five stationary hospitals, each with 100 beds and accommodating 500 patients; and 14 general hospitals, with 540 beds in each and accommodating 7560 patients. There were also 10 voluntary hospitals, accommodating 1800 patients. About 20,000 beds in all have been available and all these hospitals have been considerably increased. 4500 special pattern beds and bedding have in addition been sent out, and 875 are in reserve. There are seven hospital trains, four of which are at Cape Town, one at East London, and two (including Princess Christian's train) in Natal. There are 10 hospital ships, with from 150 to 250 beds in each, or about 2000 beds altogether. Some 50 tons of purely medical material go out to the Cape every week, and medicines in compressed form and bandages have been sent by millions. These bandages, I may say, would stretch to the Cape and a good part of the way back again if placed end to end. Every soldier as a part of his kit took with him two blankets, and in addition the War Office have sent out 372,964 more. Up to June 9th there have been 841 officers wounded, of whom 63 have died, showing a mortality of 7·2 per cent. 10,564 men have been wounded, with 551 deaths, or a mortality of 5·2 per cent. In other words, 93 per cent. to 95 per cent. recovered. Between 15,000 and 16,000 invalids have been sent home in the ships. Extensive organisation at home was required to deal with so large a number of sick and wounded, but very many have arrived practically fit to return to duty or well enough to go on sick furlough shortly after admission to hospital. With the assistance of the Director-General, Surgeon-General Jameson, and the medical authorities at home the abundant supply by Government of everything that could be considered useful or desirable the organisation of this huge department and the distribution of its units over an immense territory to the places where they were wanted have been accomplished without a hitch and without drawback and to the complete satisfaction of those concerned. This has depended, in the first instance, on the consummate ability, resource, and capacity for organization of the Principal Medical Officer, Surgeon-General W. D. Wilson, and in the next upon his very able subordinates. No words of mine are needful in his praise, as the mere statement of the extent of the organisation he controls is sufficient in itself to elicit our admiration and gratitude. Nothing is more remarkable than the way in which our soldiers have recovered from their injuries and been able, in a large proportion, to return to duty. Without going into details there were amongst the wounded many of the most severe forms of injuries. Bullets traversed the brain, the chest, the heart, the abdomen, the great joints, and the largest bones, and yet complete recovery in a very large proportion followed. Many explanations have been given of this. The wonderfully pure air of the veldt is a favourite suggestion with many and all admit that antiseptic methods count for much. I am myself convinced that the main factor is the small size and high velocity of the bullet which inflicts a very small and rapidly closing wound—a clean-cut wound rather than the tearing contused form of damage caused by the much heavier projectiles formerly in use. I do not think the climate has much to do with it, for in the American war in Cuba, although the troops were decimated with typhoid fever, yellow fever, and malaria besides, the wounds inflicted by the Mauser bullets which were there used were recovered from with the same facility and in exactly the same proportion as in South Africa. I trust that I have not wearied you and that you will forgive me for having talked so much about myself. Those who are indulgent and who remember on whose behalf the toast is given will, I feel sure, recognise the difficulty of altogether excluding the subject of it. As I have already said, what I did was done from a sense of duty, and if I may judge from many kind expressions which have reached me from many different sources—and not the least kind are those which have been addressed to me to-night—my action has been rewarded by a considerable measure of success. I have myself the consciousness that at all events I did my very utmost and my very best, and none can do more

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THE IMPERIAL YEOMANRY HOSPITAL.

BY ALFRED D. FRIPP, M.S., F.R.C.S.

Colonel A. T. Sloggett has just returned from a flying trip to Bloemfontein and he is very pleased to get back here. He

fully confirms the opinion I have already given that we are better off at this place from every point of view. The entire force under Lord Roberts has just quitted Bloemfontein and has left the town unoccupied save by a guard and the 4000 sick who are in hospital. Colonel Sloggett has not a good word to say for Bloemfontein as a site for a hospital. Dust-storms seem to be as bad there as they are at De Aar, for the ground has been trampled over for many weeks by tens of thousands of men.

We are still very full except in the two huts which, as I have already explained, we keep reserved for the Yeomanry. These are not more than half full, but almost every day a few yeomen come in. We find the patients generally prefer the tents to the huts, for, except when they are really gravely ill, they have a feeling of greater comfort and freedom when under canvas. Our field hospital has just passed up country and the *personnel* spent some hours with us before resuming their journey. We hope that they will be included in Lord Roberts's further advance.

We have managed to make quite a respectable cricket ground, the pitch of which is, of course, of matting. Fielding is possible for a few yards round the wickets, but beyond that it is very rough, for nothing has been done to the ground beyond removing boulders and karoo bushes, thus leaving an irregular and wholly un-grass-like surface. The Bedfordshire Regiment have been to play with us, and to-day a team of our men is going to De Aar to play the Civil and Military Club there. I am afraid they will not have much time, for the train which was to have taken them at 9 A.M. did not leave here till 1 P.M., and it is pitch-dark now by half-past five, sunset being at 5 o'clock and the twilight extremely short. We are still having lovely weather, about as hot in the sun as a really hot summer's day is in England, and the cold nights which set in a little while ago have ceased lately. For days together we do not see a cloud, unless, indeed, it be a cloud of locusts. These insects are always with us—sometimes a few and sometimes in large clouds, of which we have taken some excellent photographs. You will hardly believe me when I tell you that yesterday the ordinary railway-train was stopped by locusts, but it is a fact, nevertheless; for sitting on the metals, the warmth of which appears to be seductive to them, the locusts get crushed by the wheels and lubricate the surface to such a degree that the engine is unable to climb the steep incline. They settle on and around our camp—more around than on—and the other day they ate up all the little shoots of new grass and the green sprouts of the karoo bushes which have just been tempted to fresh growth by the recent rains.

The word "steal" apparently does not exist in the vocabulary of this country. Its place is always taken by "commandeer" unless a black man does it. Everybody seems to think that there is nothing wrong in "commandeering" everything he requires if he sees an opportunity, and if one man's bath towels or blankets have been "commandeered" by someone else he at once "commandeers" the first substitute for the missing articles which he comes across.

The other night a new hut which was to be filled the next day from a hospital train tempted us to push aside the 34 beds and have an impromptu dance. I think it did good to everybody who came and certainly it was greatly enjoyed by one or two local farmers and their wives and children. Wounded officers attended in their splints and bandages, and dancing was kept up until half-past ten.

The growth of the hospital goes on most satisfactorily. I think we shall be completely established by June 1st, that is to say, five months—and not six, as I stated erroneously in my last letter—from the day of the letter of Lady Georgiana Curzon and Lady Chesham which called the hospital into being.

Every Saturday our weekly convalescent train goes to Cape Town. Our specialists are often asked to give an opinion outside this hospital but they are always glad to get back again.

Deelfontein, May 7th.

I am glad to say that our hospital continues popular. The men as well as the officers say, "There never was such a place." We have had great advantages in the very fine equipment which the committee in London were able to provide us with and I think that if English people could see what a very great difference can be made in the efficiency and comfort of a military hospital by means of a little more money they would be quite willing to spend more on the medical department of the army. I hope that the war will do at least one good—that a larger sum will be voted every year for the Royal Army Medical Corps. If that were done probably it would be more easy to deal with outbreaks of infectious disease such as enteric fever, there would not be overcrowding in the hospitals, and there would be room for every sick soldier. If the presence of all the many voluntary hospitals out here does lead in the future to more money being spent on the Army Medical Department the subscribers to these voluntary hospitals will, indeed, feel that they have done a good work. With enough spent on a military hospital I think that results can be obtained as good as, or better than, in any London hospital, for not only will all the artificial aids to medical skill be present, but in this war at least a military hospital will have a great pull in the splendid climate and air of the Karoo. The things in regard to which we are worse off than in London are eggs, fresh fruit, and vegetables, but we get plenty of potatoes and onions.

To-day we have 74 yeomen in hospital. They are mostly down with sickness, but a few of them have been wounded. Among these are cases from the action near Warrenton in which the Yeomanry had their baptism of fire. I saw in one of the medical papers sent from England a suggestion that a light supper ought to be provided for men in military hospitals. I quite agree with this and it is easy to do it. We started the practice here, and I think that it is done in all the hospitals, for the interval between 5 o'clock P.M. and 7 the next morning is unduly long.

Pneumonia, as we have expected, is beginning to exert itself. Already it has carried off one of our cooks (Sergeant Phillips), who died on May 10th. He is a great loss, as he was a capital man and a hard worker, doing all the cooking of the nursing department. Several orderlies are also on the sick list, two of them from enteric fever. At present, I am glad to say, they are doing well. The first death we have had in the officers' ward occurred this week, when Lieutenant Cummings, R.A., died from enteric fever. His battery is at present at De Aar, so fortunately his brother officers were able to come over to the funeral.

A present of a plant for electric light installation has arrived, and as our bill for oil is very large we got the railway people to lend us one of their oil engines which they are not now using in the hope that we should be able to work the electric light with it and so save money. The railway people complied with our request, but on giving the engine a trial we found that the noise and smell made by it quite precluded its use near the hospital and the leakage of the electric current prohibited us from placing the engine further afield, so we have had to abandon the idea of the electric light.

Deelfontein, May 14th.

BULLET WOUNDS INVOLVING THE LUNG.

Mr. H. Temple Mursell, M.B., C.M., F.R.C.S. Edin., civil surgeon attached to the British Forces, South Africa, sends us the following interesting notes:—

A considerable number of cases of bullet wounds involving the lung have come under treatment during the war in South Africa. All those which have come within my own experience have been caused by the Mauser bullet. It has been frequently stated that the damage to the tissues inflicted by a small hard-cased bullet such as the Mauser, travelling at high velocity, is comparatively small, and within certain limits the statement appears to be correct. At the same time far more injury to the tissues is caused than would appear to be the case from the small size and innocent aspect of the wounds of entrance and exit. In those instances in which it has been necessary from any cause to follow up the track of such a bullet wound, the death of tissue around the track has been found to be much in excess of what might be anticipated. In muscular and fibrous tissues the necrosis is happily of an aseptic character in the vast majority of instances, but the resulting cylindrical cicatrix is of considerable extent and often produces more crippling than would be expected owing to the muscles and their sheaths becoming firmly bound down. In the lung a similar destruction of tissue might at first sight be predicted. But the small resistance of the lung tissue, its excellent blood-supply, and its great elasticity, apparently protect it from any serious or extensive injury in the majority of cases.

Further, although the wound from access of air and the consequent increased possibility of infection by organisms might reasonably be expected to become septic it seldom appears to do so. The immediate shock is rarely great, nor is it often that the immediate hæmorrhage is alarming. In several instances though blood was pouring from the mouth the man was able to walk up and report himself to his officer.

Hæmorrhage into the pleura in any quantity is comparatively rare, though a small amount is, in my experience, usual and is discoverable by the ordinary physical signs, but often needs careful auscultation and percussion to diagnose. The effused blood as a rule rapidly disappears and the wound in the lung as rapidly heals. In one only of the cases under my care has the intra-pleural hæmorrhage been alarming, and from its comparative rarity the case seems worthy of record.

Ten days after being wounded at Paardeberg Private P—— came under my care. He was admitted to hospital late at night in a very collapsed condition, having travelled a long distance. Beneath the left clavicle, at the junction of the middle and outer thirds, was the entrance wound of a Mauser bullet, and the exit wound was found between the ninth and tenth ribs posteriorly on the same side about two inches external to the outer edge of the erector spinæ. The left chest moved well on respiration and the percussion note was resonant except for obscure dulness at the base posteriorly. (The patient was too exhausted to try the effect of change of position.) There was absence of breath-sounds on the whole left chest except near the sternum. On the right side the breathing was harsh. On the left side with coin percussion the clanging sound was marked and audible without a stethoscope or application of the ear to the chest. Vocal resonance was in abeyance. The heart was pushed over to the right side till the apical impulse and point of greatest intensity of the first sound were one and a half inches to the right of the sternum. There were great loss of power and aching pain in the left arm and hand, but no loss of sensation and no swelling. Radial, brachial, and axillary pulses on the left side were imperceptible and the limb, though warm, was of lower temperature than its fellow. Apparently there was thrombosis of the subclavian artery in its third part, fair collateral circulation being established.

It was decided to aspirate the left chest, and this was done by means of an ordinary trocar and cannula, the trocar being inserted through the wound of exit of the bullet, between the ninth and tenth ribs posteriorly. Two and a half pints of fluid blood of dark colour and some air were removed. Chloroform was given as pus had been anticipated, the temperature having varied from 100° to 102° F. The relief to the breathing and to the circulation was great. The following day faint breath-sounds were audible over the left chest anteriorly and posteriorly except below the ninth rib, and the cardiac impulse and point of greatest intensity of the first sound were just at the right edge of the sternum. Four days later the physical signs remained the same, and there were much præcordial pain and dyspnœa. Aspiration was again resorted to in the same region with a Potain's aspirator, eight ounces of fluid blood and a large quantity of air being removed. The relief obtained was considerable, but the temperature remained febrile. Morphia was required nightly on account of præcordial pain. 14 days later, the symptoms being aggravated, chloroform was given and a portion of the seventh rib was resected in the posterior axillary line. The pleural cavity was found to be full of fibrinous strings and about eight ounces of fluid blood. A large-sized drainage-tube was inserted. From this time improvement was steadily maintained, except for a temporary relapse which was induced by the patient having to be moved from one ward to another. He was sent down to Cape Town convalescent two months after being wounded.

The conclusions to be drawn from the cases seen are:—

1. In the majority of cases relatively little immediate or remote damage results from Mauser bullet wounds of the lung.

2. The immediate hæmorrhage is usually small.

3. Intra-pleural hæmorrhage in small quantity is the rule; in large quantity comparatively rare.

4. In intra-pleural hæmorrhage of any large extent ultimate resection and drainage will in most cases be required.

5. The destruction of lung tissue is relatively small.

FIELD FORCE.—SERVICE ABROAD, SOUTH AFRICA.

Table showing the Personnel of Medical Units on the Lines of Communication.

Unit and place of mobilisation.	Names.	Remarks.
No. 13 General Hospital (Depôt R.A.M.C., Aldershot).	*Royal Army Medical Corps.* Major W. T. Swan (*a*). Lieutenant T. Biggam. " H. Richardson. " W. L. Baker. " B. R. Dinnis. " J. S. Twigg. " J. Powell. " R. L. Argles. " F. S. Walker. " W. Bennett. " P. G. Stock. *Civil Surgeons.* Mr. W. Dick. " T. H. Gardner. " E. L. Mansel. " V. E. J. McDonogh. " W. J. Moir. " W. J. Sweeny.	145 non-commissioned officers and men (including St. John Ambulance Brigade).

(*a*) Secretary and Registrar: to act as officer in charge of the unit till its arrival in Natal.

1. The Principal Medical Officer, Natal, will arrange for a Lieutenant-Colonel of the Royal Army Medical Corps in South Africa to be detailed as officer in charge of this unit.

2. The quartermaster and two warrant officers will join the unit on its arrival in South Africa.

3. 20 nursing sisters, Army Nursing Service Reserve, will be ordered to embark as early as possible after June 16th.

4. A superintendent or acting superintendent, Army Nursing Service, to be selected from the Army Nursing Service in South Africa, an extra nursing sister being included in the detail referred to in (3) to allow of the adjustment.

Medical Division, War Office, June 13th, 1900.

THE THIRTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

THE Executive Committee of the Thirteenth International Congress of Medicine announce the following entertainments offered to members attending the Congress.

On the opening day of the Congress, August 2nd, Dr. Lannelongue, the President of the Council, will give an evening fête in the name of the Government of the Republic.

On August 3rd members will be invited to an evening fête by the President of the Congress.

On August 5th the President of the Republic will receive the members of the Congress in the Elysée.

On August 8th an evening fête will be held in the Palais du Sénat and the Gardens of the Luxembourg, where the members of the Congress will be entertained by the Bureau and the Organising Committees of the Congress. The Town Council of Paris is to be asked to give an entertainment.

Besides the above, sundry fêtes will be organised in the various sections, and it should be noted that to all these entertainments the wives, daughters, and sisters of members attending the Congress are invited. A ladies' committee has been organised for the reception of these ladies.

A NEW PUBLIC GARDEN IN THE BLACKFRIARS-ROAD.—The Bishop of Rochester on June 15th formally opened to the public the churchyard and burial ground of Christchurch, Blackfriars, which have been adapted for a public garden. Several years since a similar adaptation was considered and the Metropolitan Public Gardens Association was consulted on the question, with the result that as soon as the St. Saviour's District Board of Works had a vested interest in the churchyard and burial ground the association agreed that it would at its own cost lay out the ground for public recreation purposes. This generous promise has now been fulfilled.

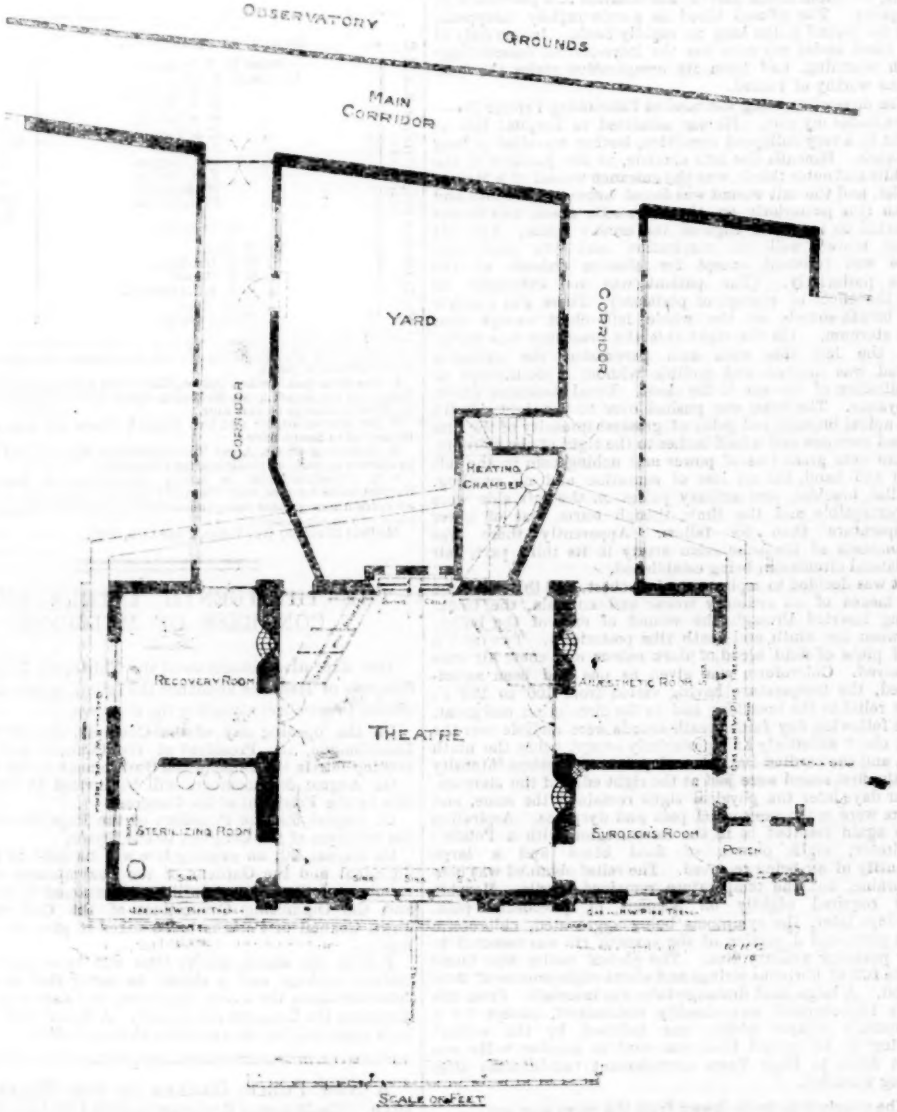
MEDICINE AT THE UNIVERSITY OF OXFORD.

THE ancient University of Oxford, although not possessing such a large and flourishing medical school as her sister Cambridge, has of late years been actively engaged in improving her facilities for giving instruction in the art and science of medicine. Among the outward and visible signs of progression two buildings stand prominently forth—namely, the new operating theatre of the Radcliffe Infirmary, which has been in working order for nearly two years, and the new laboratories for the study of pathology and the kindred sciences which are at present in course of erection.

THE NEW OPERATING THEATRE AT THE RADCLIFFE INFIRMARY.

To begin with the finished building. As will be seen by the plan (Fig. 1) the theatre is completely isolated upon three sides and only connected on the fourth to the other infirmary buildings by two corridors. The actual operating theatre occupies the middle of the building and on one side are an anæsthetic room and a surgeon's room, while on the other are a sterilising room and a recovery room. The walls of the theatre are panelled in white marble, while all the doors leading therefrom are of iron which is enamelled in white; there is an open fireplace and an electric exhaust fan in the roof. There are no shelves or brackets of any description on the walls, so that they can be washed down at any time by means of a hose. The warming is done by hot water coils which are heated

FIG. 1.



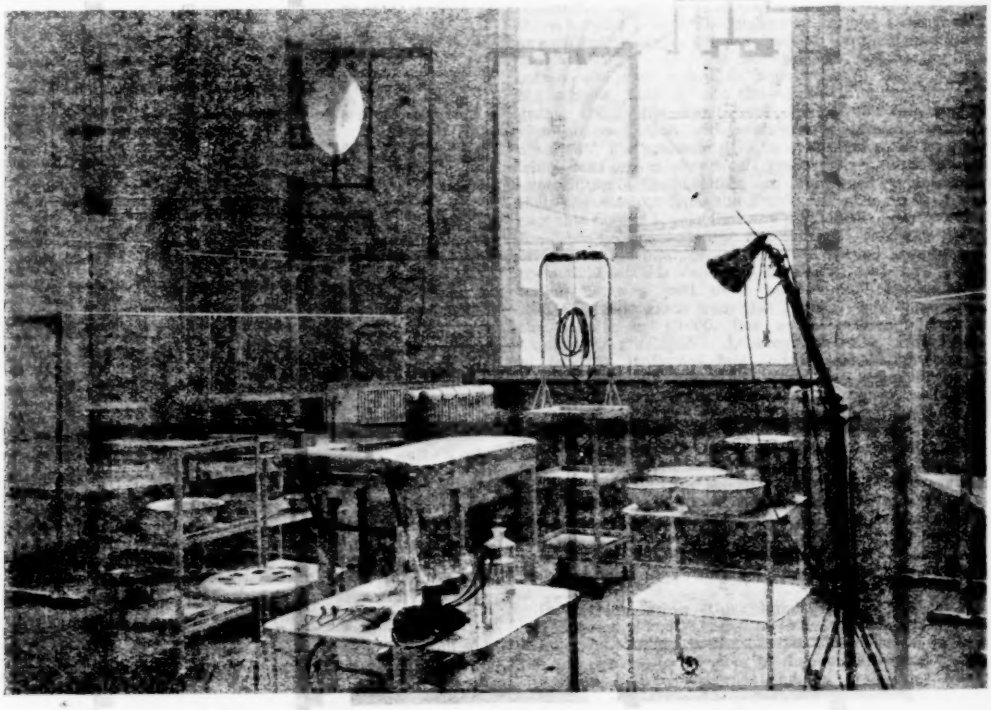
Radcliffe Infirmary, Oxford. Plan of the new Operating Theatre.

from below by gas stoves, and these coils can be, as is seen in Fig. 2, swung out from the wall so that both warming the air and removal of dust are greatly facilitated. Light is obtained from a large north window. By night, light is obtained from groups of electric lights situated in the roof above the glass ceiling, which are renewable from outside, and from a moveable standard lamp with a parabolic reflector.

The furniture is all made of iron enamelled white and includes a specially designed operating table together with the usual instrument cabinets, which are so low that the tops can be easily seen and dusted, lotion stands, surgeon's table with douche bottles, and tables for trays. These are all fitted with ball-bearing rubber wheels. Two enamelled iron stands are provided for the use of students and spectators. The anæsthetist's room is fitted as an x ray room. Current is supplied direct from the main and serves also to work a cautery and various electric lamps. The sterilising room contains two large sterilisers for the surgeons' coats and for dressings, instrument and water sterilisers, a boiler for trays and bowls, and a towel warmer. All the water-pipes are of copper and stand three inches clear of the walls. All cupboards are of enamelled iron and glass, and all sinks are of Twyford's porcelain and drain out into the open air and so into the gutter surrounding the theatre. The plug of the basins is a simple solid indiarubber ball. The floors are of mosaic and all angles are rounded. The total cost, exclusive of surgical appliances, was £3102 1s. 8d. One feature of the apparatus is an ingenious lift for patients when on the table which was devised by Mr. H. P. Symonds.

We think that the committee of management of the infirmary may well be congratulated on having obtained as perfect an operating theatre as is to be found up to the present time in any town in the kingdom. Mr. W. H. Castle of Oxford is the architect.

FIG. 2.

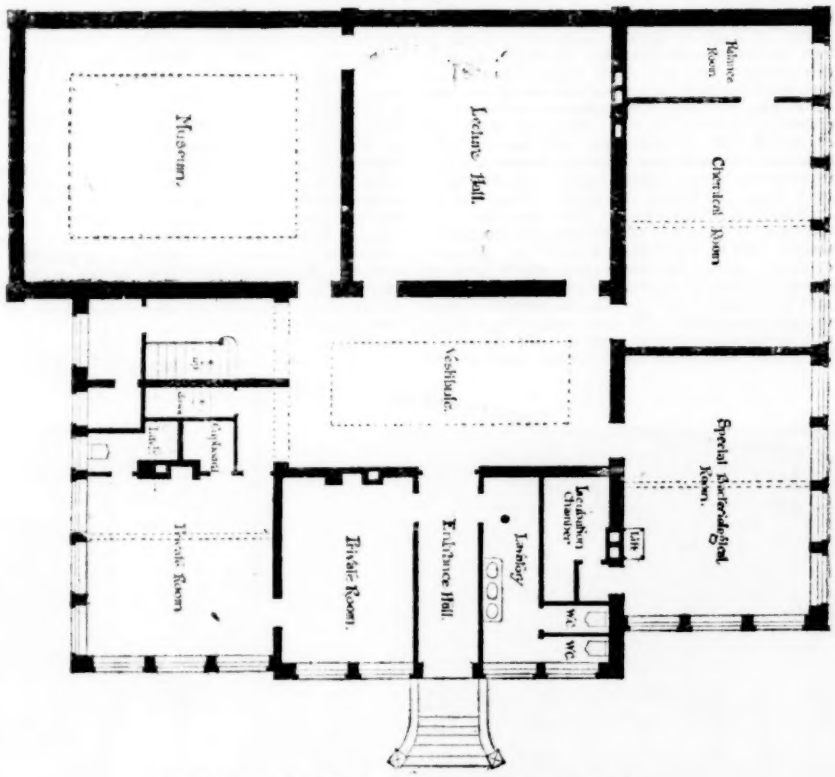


Interior of Operating Theatre, showing big north window, furniture, and heating coils.

THE NEW PATHOLOGICAL LABORATORIES.

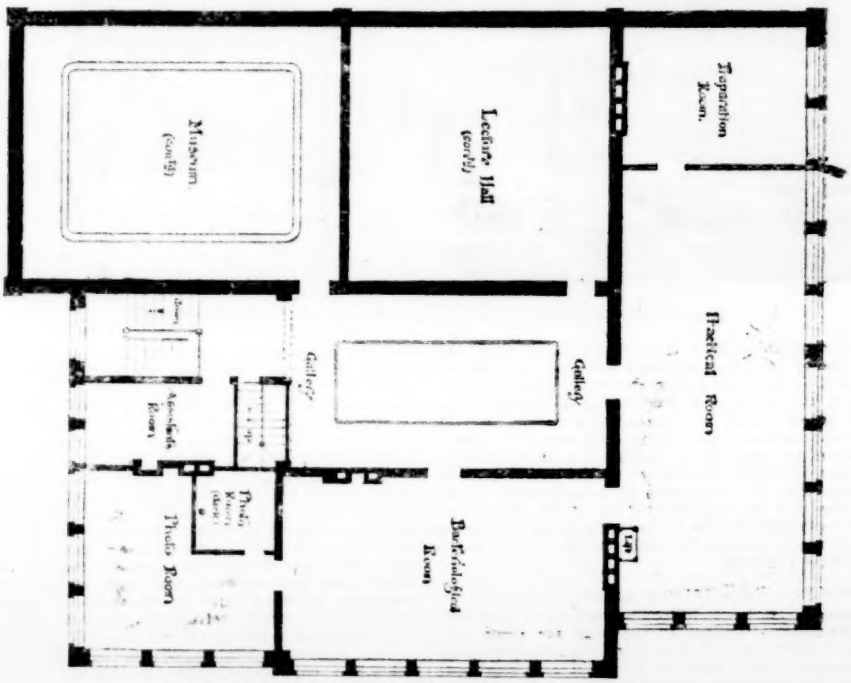
The existing accommodation for the teaching of pathology in the University of Oxford having been for some time recognised to be insufficient, about a year ago the generosity of an anonymous donor provided a sum of £5000 on condition that the University added an amount sufficient to provide for and maintain an adequate department. The University accordingly last summer added a further sum of £5000 to the gift and voted for a period of five years an annual grant of £250 for maintenance. Plans of a department, prepared by Mr. J. Augustus Scuttar, of 41, Bishopsgate-street, E.C., were accepted and the erection of the building is now well advanced, its completion being expected about the beginning of 1901. The site for the department is within the grounds of the University Museum to the south of the department of human anatomy. It occupies a space 75 feet by 65 feet and to the north has a yard 60 feet by 30 feet. The front elevation, in which is the main entrance, is towards the east and nearly all the rooms are lighted either from this aspect or the north. The building is of a superior red brick with stone dressings and consists of a partially sunk basement and two floors. Entering by the main door (Fig. 3) access is given to a central hall from which or from its gallery all the rooms of the department open. Running up through both floors are a lecture room 25 feet square and 22 feet high and a museum 31 feet by 25 feet and of a similar height. Besides these on the ground floor are a research room for experimental pathology 25 feet by 18 feet, and another of similar size fitted up as a chemical research laboratory. To the former is attached an incubation room and to the latter a small balance room. On this floor there also are a private room for the head of the department, a private research laboratory, lavatory accommodation, &c. On the first floor (Fig. 4) there is a large room, 43 feet by 18 feet, for the teaching of pathological histology, and to this is attached a preparation room. There is also a class-room, 31 feet by 18 feet, for practical bacteriology, a photographic room, a demonstration room, &c. In the basement of the department are a private laboratory, a dark laboratory, a large preparation room for the routine pathological and bacteriological work of the department, store room, heating apparatus room, and workshop. The basement will also contain a refrigerating room, 10 feet square and 8 feet high, kept below zero by a Hall and Co.'s carbon dioxide freezing apparatus. Arrangements have been made by which the engine necessary for this apparatus shall be capable of also driving centrifuges or other machines.

FIG. 3.



New Pathological Laboratories, Oxford University. Plan of ground floor.

FIG. 4.



New Pathological Laboratories, Oxford University. Plan of upper floor.

REPORT OF THE EXECUTIVE COMMITTEE OF THE PRINCE OF WALES'S HOSPITAL FUND FOR LONDON

UPON THE MEMORIAL TO HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G., FROM THE COUNCIL OF THE METROPOLITAN RADICAL FEDERATION, DATED 17TH MARCH, 1900.

THE memorial (which incorporates an article in the *Contemporary Review* by the Hon. Stephen Coleridge) after stating that the Federation represents from 40,000 to 50,000 members of working men's Radical clubs and other Radical organisations in London, and that the mass of the population by reason of the dread of entering infirmaries, caused by the social ignominy that it incurs and by the social and political disqualifications that accompany it, are absolutely dependent on the London hospitals for the skilful treatment of their more serious diseases and accidents, sets forth two matters of complaint, which are summarised as "one of the gravest scandals of our time." They are as follows:—

1. A widely spread idea that there is too much a tendency now-a-days on the part of medical doctors and students attending the London Hospitals to regard the patients that come under their hands as so much material for experiment, and the memorial in this connexion says:—"It seems to be an axiomatic truth that if experiments must be made on a living subject, the proper subject must be the person of the patient himself." An inference is drawn that the popular suspicion is based on sufficient ground.

2. That grants of money from the general receipts of hospitals are devoted to medical schools; that since the inauguration of this Fund such grants have been increased; that certain hospitals in London in receipt of large sums of money from the Prince of Wales's Hospital Fund allocate considerable grants of money from their general receipts, among which the contributions from the Prince of Wales's Fund figure, to the medical schools and to the medical training of the students attending the schools of those hospitals. And in the said article the writer after referring to your Royal Highness's statement in 1897 that there was no intention of devoting any part of this Hospital Fund towards the support of the medical laboratories, says: "Upon the committee of the Prince of Wales's Hospital Fund, therefore, there lies the heavy responsibility of disregarding His Royal Highness's clearly expressed beneficent intentions."

With regard to the first allegation the Executive Committee, under whose direction the hospitals have been recently subjected with their own accord to careful and expert inspection, are deliberately of opinion that it is unfounded in fact. No particulars are given which can be dealt with by evidence in detail. The charge is general—founded on an alleged "widely spread idea" and on what "seems to be an axiomatic truth." The committee from their knowledge of the hospitals doubt, and have reason to doubt, that any such idea is at all widely spread, and they are sure that, whether widely spread or not, it is erroneous and does grave injustice both to the medical men and the students. The axiom appears to them questionable and the inference drawn from it unjustified. Upon this loose and somewhat scandalous charge against a great profession they do not consider they are called upon to say more.

The argument of the second allegation resolves itself into this. The Fund subscribes to a hospital, a complicated organisation the main object of which is surgical and medical aid to the poor. The hospital comprises a medical school. Therefore the Fund supports the medical school. The Executive Committee loyally adhered to your Royal Highness's statement in 1897 that there was no intention of devoting any part of the Fund towards the support of medical laboratories. The honorary secretary of the Metropolitan Radical Federation has already been informed by the Executive Committee of this Fund that no grant has been made from this Fund towards the support of medical laboratories either in the case of the Middlesex or any other hospital, and that all hospitals applying are considered according to their needs and merits as institutions for the relief of the suffering poor. The utmost that can be made of the charge is that some minute unascertained portion of a grant for general purposes may have percolated under the administration of the hospital concerned into a medical school or laboratory. But even this has been guarded against, and so far as the committee can ascertain no such percolation has actually occurred.

The awards made by this Fund to the hospitals have been made with certain conditions, following as nearly as possible the recommendations of the visitors who have inspected and reported upon them, and these awards and the objects for which they were made are stated in the annual reports of the Fund and have also been published in the public press. In no case can there be found in these reports an award given for a medical school or laboratory.

Nor can it be fairly said that the hospital authorities have in fact used any part of such grants for medical schools and laboratories. It is alleged that certain payments in connexion with the schools have been increased since this Fund was started, but even if this be so it by no means follows that such increases were made in consequence of the help given by this Fund to the hospitals in question. In three cases (Middlesex, London, and St. Mary's) out of the four quoted the receipts of these hospitals, excluding any grant from this Fund, were considerably over £40,000 more in 1897 than in 1896. These hospitals had, therefore, much greater resources out of which larger grants could have been made to the schools quite irrespective of any grants from this Fund. In the remaining case, that of Guy's Hospital, where £116 is mentioned as being paid for the school in 1896 and £595 in 1897, the hospital's receipts, including £8000 from this Fund, were less than those of 1896, thus giving a result antagonistic to the theory of greater funds greater help to the schools. There is no reason for supposing that Guy's, any more than the other three hospitals, used the contributions from this Fund, or any part of them, for the purposes of the medical school or the laboratory. It is to be observed that, accepting as correct the sum stated to have been for the benefit of the schools, they do not rise or fall in proportion to the grants from this Fund, and have from this point of view no co-relation with such grants; indeed, it is quite clear that the amounts paid in connexion with the schools, which bear only a very small proportion to the total annual expenditure of the hospitals, are determined by factors other than the receipts from the Fund. In none of the hospital accounts does it appear that any part of the grant from this Fund has been allocated to the schools. In the case of the Middlesex Hospital, which is given special prominence in the article, £600 is disbursed in 1897 in connexion with the school, forming part of a total annual expenditure of £30,000. The grant from this Fund in 1897 is quoted in the article as £1000, but as a matter of fact the amount was £2925. Looking at the varied items of receipts, it is not fair and reasonable to infer that because money from this Fund is included in such receipts any part of it must necessarily have been used for the school, especially when it is shown that among the other receipts there are annual dividends of £6615, of which £2076 are for the Cancer Fund. It would be more fair and reasonable to assume that a portion of such dividends is properly available for school purposes, and this presumption is borne out by a recent statement in the public press by Sir Ralph Thompson, who refers to some bequests to this hospital which are given not only for the cure and care of patients suffering from cancer, but also for the purpose of investigating and promoting a general knowledge of treating it.

In administering this Fund the committee have endeavoured in all cases to aid the hospitals in the manner best suited in the case of each hospital to benefit the sick and suffering poor of London, and they have no reason to believe that the eminent authorities who are associated with the large and important hospitals that have medical schools have done otherwise than act to the best of their ability in promoting the highest interests of the hospital patients.

THE THAMES CONSERVANCY.

THE general report of the Conservators of the river Thames for the year 1899 has recently been published. Of the public bodies which are engaged in work directly or indirectly bearing on the health of the people of London not one, perhaps, carries out the duties committed to it with more thoroughness and less ostentation than the Thames Conservancy Board. It is probably realised by few people that the purification of the river is only one amongst a number of important duties which the Conservators have to perform, a great part of their work being the protection of the navigation of the river, both above and below London.

The report, which is merely a brief summary of the work which has been done during the year, is divided into three parts, which deal respectively with the lower river, with the upper river, and with the prevention of pollutions. During last year the Conservators completed the deepening of the river channel from Blackwall to the Nore, and also carried out dredging operations between Crayford Ness and the Royal Albert Docks and also at Mucking Flats. A survey was carried out in the neighbourhood of Tilbury Docks, and the results of the investigation showed an improvement in the channel of the river at this point. Above London Bridge it is of interest to note that a survey has been completed as far as Vauxhall Bridge and that the result shows an improvement of from one to two feet in the depth of the river channel. The Conservators have made provision for the prevention of the discharge of refuse from the hoppers which are used for the conveyance of mud to the sea, the mooring-places and landing-places on the river have been maintained in order, and some additional moorings have been laid down. During the year 55 vessels were raised by the Conservators, and of these eight were steam-vessels and 47 sailing-vessels and barges. In the upper river above Staines dredging operations have been necessary to maintain the navigable channel, the tumbling-bay at Old Windsor weir has been extended on the Berkshire side and the crest of the existing tumbling-bay has been lowered, and the back-water below the weir has been deepened. A new weir and flood channel are in process of construction at Sonning.

We mention briefly the things which have been done on the river to give some idea of the enormous extent of the task carried out by the Thames Conservators. The most important part of their duties from a sanitary point of view is that which has to do with the prevention of pollution of the river in carrying out the extensive powers which were conferred under the Act of 1894 (57 & 58 Vict., cap. 187). The attention of the Conservators has been given chiefly to towns and large centres of population and to those places where sewage farms and works are situated. In all cases all the effluents have been frequently tested by the Conservators' analyst. During the year 1899 the pollutions from 17 towns and villages, containing together a population of over 36,000, were diverted from streams which were tributaries of the Thames. In those cases in which local authorities still cause pollution pressure has been continuously exercised and in most instances the sanitary authorities are taking measures to fulfil the requirements of the Conservators and have either submitted, or are preparing, drainage schemes for submission to the Local Government Board. Amongst other places, Witney, Thame, Aylesford, and Marlborough have commenced drainage works which will involve a considerable outlay on the part of each of those places. It was found necessary to institute legal proceedings in 14 cases in which the authorities did not comply with the requirements of the Conservators. As a result of these prosecutions four convictions were obtained, three cases were adjourned by the magistrates, and seven were withdrawn on the undertaking that the defendants would take immediate measures to carry out the necessary work. In the case of scattered farms, houses, and factories pollution has been diverted in no less than 197 instances. In regard to the pollution from houseboats and barges the powers of the Conservators have been carried into effect; these vessels have been watched by the inspector and no case of pollution has been discovered. This is a satisfactory improvement. It may be remembered that some years ago the condition of the river at Henley was most insanitary owing to the pollution from houseboats and THE LANCET at the time found it necessary to direct attention to the state of things which then existed.

The report on the flow of water in the Thames calls for notice. During the months of July, August, and September last the Conservators record that the average flow over Teddington weir was below the 200,000,000 gallons a day which they consider to be the minimum amount which should be left after the metropolitan water companies have drawn their supplies. In October the daily average rose to something over 250,000,000 gallons daily, in November to over 900,000,000 gallons, and in December it again fell to about 475,000,000 gallons daily. The fact that for three consecutive months during last year the daily average flow of water over Teddington weir was below that which is considered by the Conservators to be the minimum quantity which should flow down to the lower reaches of the river is a point of considerable importance. It emphasises the fact that too much water is already withdrawn from the Thames during periods of drought by the metropolitan water companies, and it is the strongest possible argument against allowing any further removal of water from the Thames during periods of drought. There is, of course, no doubt that if the whole of the natural flow of the Thames were allowed to pass down the river the expense of keeping open the navigable channels of the lower river would be considerably less than it is at present. The increase of outlay which is rendered necessary by the abstraction of so large a quantity of water for drinking purposes, therefore, causes an outlay in dredging which would not otherwise be needed. The flood-water which now passes down in large quantities thoroughly flushes out the lower river occasionally, but if this flood-water were taken by reservoirs in the Upper Thames it would necessarily follow that there would be a largely increased expense in dredging the lower river.

The work done by the Conservators for the purification of the upper river has been very thoroughly carried out and the improvement which has taken place in the purity of the water has been enormous. It must not be thought, however, that this purification of the upper river cleanses to any very marked extent the Thames in London. Unfortunately, during periods of drought by far the greater proportion of water which would naturally flow down through London is taken for drinking purposes and the water which is between the bridges is more affected by the state of the lower river than by that of the water which flows down from above.

THE ANNUAL DINNER OF THE INDIAN MEDICAL SERVICE.

UNDER the chairmanship of Sir TREVOR LAWRENCE, Bart., the officers of the Indian Medical Service held their annual dinner at the Hotel Cecil on June 14th. After the usual loyal toasts had been proposed and honoured that of the "Sister Services" was given by Surgeon-General C. SIBTHORPE, I.M.S. He mentioned in the course of his speech that a professor of one of the Scotch medical schools had decried their brother officers in the Army Medical Service. The professor thought that some of the officers had not as much experience as they ought to have and were not up to the standard, but he (Surgeon-General Sibthorpe) found that the standard of education was extremely high and he had never found them wanting in their professional work.

Sir HENRY NORBURY, K.C.B. (Director-General of the Medical Department of the Royal Navy), in responding to the toast, said that it was not often that the naval medical officers were associated with the Indian Medical Service, but it was not impossible that they might soon find themselves working together again as an outcome of what was then happening in China.

Surgeon-General JAMESON, C.B. (Director-General of the Army Medical Service), also replied to the toast of the "Sister Services." He said that they had at the present moment in South Africa no fewer than 8000 attendants belonging to the medical service for the care of the troops. He was happy to state that up to the present moment they had been able to meet every demand for *personnel* and *matériel* made on them. They had also made a new departure by employing in South Africa a large number of civilians in the bearer companies, thereby relieving a corresponding number of regular bearers who were more usefully employed in the field hospital. They had also taken into their service from time to time a considerable number of special bearers, which had proved a most useful plan. When Sir Redvers Buller left the railway and marched 30 miles to fight the battle of Spion Kop he engaged 1600 civilians that he picked up on the spot, and through their aid he was able before nightfall to remove every wounded man from the field of battle and to have them comfortably in hospital before breakfast time the next morning. They had now the intention at home of making some further arrangements for the care of the men invalided from the seat of war. This was rendered necessary because almost every case in which it was thought the voyage home would be beneficial was being returned to this country. They were receiving in England a very large number of these patients every week and that put their hospitals to a severe strain. They had not up to the present moment required to make use of the civil hospitals. Surgeon-General Jameson then referred

to the effect of inoculation for enteric fever. It was difficult, he said, at this period to get accurate statistics, and it was quite clear that a very large number of figures must be collected before a final opinion could be arrived at. Everyone, therefore, would recognise how difficult it was to form any sort of general conclusion. They had read a good deal in the daily papers about the enormous amount of enteric fever among the troops in South Africa, but he would remind them that it was not so bad as it was in the Afghan war.

The CHAIRMAN proposed the toast of "The Guests" and referred to the good feeling which existed between the civilians and the military medical men in South Africa. The toast was responded to by Dr. W. S. CHURCH, the President of the Royal College of Physicians of London, who said that the profession owed a debt of gratitude to the Indian Medical Service. The names of Manson and Ross were familiar to all in active work and medical men looked to that service for information in regard to diseases concerning which practical experience was not obtainable in England.

Dr. FREDERICK ROBERTS, the President of the Medical Society of London, proposed "The Indian Medical Service" and the toast was replied to by Surgeon-General Sir JOSEPH FAYRER, Bart., who referred to the very early days of the service and the influence of Broughton and of Hamilton.

The proceedings terminated with votes of thanks to the chairman and to Mr. Freyer, to whom, as secretary, the success of the dinner was largely due.

The following is a list of the names of the guests and members who were present:—

Guests.—Dr. Church, President of the Royal College of Physicians of London, Sir Henry Norbury, K.C.B., Surgeon-General J. Jameson, C.B., Dr. Pavy, President of the Royal Medical and Chirurgical Society, Dr. F. Roberts, President of the Medical Society of London, Surgeon-General T. Walsh, A.M.S., Mr. Austin Low, honorary treasurer. Dr. Dawson Williams, Editor of the *British Medical Journal*, and Mr. Thomas Wakley, jun., Joint Editor of THE LANCET.

Members. — Dr. W. S. Playfair. *Surgeon-Generals:* A. C. C. De Renzy, C.B.; Sir J. Fayrer, Bart., K.C.S.I., F.R.S., W. R. Hooper, C.S.I., W. R. Rice, C.S.I., C. Sibthorpe, C.B., and L. D. Spencer, C.B. *Colonels:* W. Cates, D. E. Hughes, J. C. Penny, D. O'C. Raye, W. H. Roberts, Sir George Thomson, K.C.B., B. Williamson, and W. A. S. Wynne. *Lieutenant-Colonels:* H. Atkins, F. C. Barker, W. R. Browne, W. H. Cadge, A. M. Crofts, C.I.E., A. Crombie, G. W. P. Dennys, P. J. Freyer, T. Grainger, J. Ince, D. F. Keegan, I. B. Lyon, C.I.E., G. Massy, T. Mulroney, G. Ranking, G. D. Riddell, J. Scully, T. Skardon, G. S. Sutherland, W. H. Thornhill, C. J. H. Warden, D. Warliker, A. H. Williams, and H. P. Yeld. *Majors:* W. Alpin, F. Carlea, R. H. Castor, J. W. Caldwell, F. C. Clarkson, F. J. Drury, E. Dobson, A. S. Faulkner, B. B. Grayfoot, and S. Hassan. *Captain:* J. Fisher.

ARMY MEDICAL REPORT FOR 1898.[1]

III. (CONCLUDING NOTICE.)[2]

IN concluding our remarks on enteric fever among the British troops serving in India and subtropical climates we may briefly advert to its relative prevalence among officers and women and children. The ratio of admissions for enteric fever to strength among officers serving in India was 40 per 1000 in 1898 (which is a rather higher ratio than that among the rank and file), while the death-rate was 8·08. The cases were distributed over as many as 33 stations. The admission rate among the women for enteric fever was 12·2 and the death-rate 4·81, and among the children (with an average strength of 5592) the admission rate was 7·0, and the mortality rate 0·54 per 1000. It would appear, therefore, that officers suffer about equally with the men from enteric fever, notwithstanding that the hygienic conditions under which they live are presumably better and their risk of contracting the disease through the medium of native bazaars, liquors, and drinks one would think less than among the men, while the consumption of water and milk among women and children would certainly not be less, but probably more, than among the men. The problem of determining what is the exact causation of enteric fever among the European residents in India is a very difficult one which has still to be satisfactorily worked out, especially when it is borne in mind that the amount of prevalence of this fever among the native troops, jail population, and the native population generally is apparently so insignificant as compared with what it is among the Europeans.

With regard to venereal disease in India it is still too early to form any reliable opinion as to the effect of the measures which have been recently adopted for its control; still, it is satisfactory to learn that the Principal Medical Officer reports that the admission rate for these diseases in 1898 shows 136·4 fewer admissions to hospital per 1000 than in 1897, nor is this to be accounted for by the employment of men on field service. The reduction is, in his opinion, attributable to the influence of other measures, such as the new cantonment rules, the putting of bazaars out of bounds, and the continuance of the treatment of men after their discharge from hospital instead of frequently re-admitting them into hospital for that purpose.

The number of surgical operations recorded for the year as having been performed among the European troops serving in India amounted altogether to 496, of which 476 were primary and 20 secondary. Death followed in 67 cases of the former and two of the latter. The majority of the operations were, however, of a minor character. It may be mentioned that of 104 cases of abscess of the liver operated upon in 1898 46 were successful, 57 ended fatally, and one was under treatment at the end of the year.

Turning to the appendix, which is the most interesting part of the volume to the professional reader, the report itself being more especially intended for the information of Parliament and lay readers, we find a good selection of papers of varying interest. The first is one upon the Progress of Hygiene for the Year 1899 by Colonel J. Lane Notter, Professor of Military Hygiene at the Netley Army Medical School. These reports are always useful and instructive because they give a short and condensed *résumé* of what has been going on in the way of sanitation and practical hygiene during the year. Under the heading of Literature, for example, Professor Notter very briefly describes and sums up the contents of a large number of books which have been published on the subject of hygiene during the year. This is followed by a section on the work of societies with a succinct account of the proceedings and the papers read at them, and by another section devoted to special points of hygiene. The article, as a whole, gives medical officers what they want to know and is, at the same time, calculated to save them a good deal of labour and the inconvenience and expense of having to procure and carry about with them a number of books instead of selecting such only as they really need or desire to have.

The article containing a list of operations performed at Netley during the year 1898–99, with a return of the wounded invalids and surgical cases treated in the Royal Victoria Hospital, accompanied by descriptive accounts, with notes and comments upon these cases, is a conjoint production by Colonel W. F. Stevenson, M.B. Dub., R.A.M.C., Professor of Military Surgery, and by Major W. Dick, M.B. Edin., R.A.M.C., the Assistant Professor of the Army Medical School, Netley, and it is well worth reading. Some of the cases and the operative procedures adopted are both interesting and instructive. Colonel K. McLeod, M.D. Edin., LL.D. Aberd., I.M.S., Professor of Clinical and Military Medicine at the same school, deals with the patients treated in the medical division of the hospital. One of the cases he describes is one of splenic anæmia which followed an attack of Mediterranean fever to which it was apparently a sequela; another is a case of syphilitic cachexia and paroxysmal hæmoglobinuria associated with Raynaud's disease. Surgeon-General W. Taylor, C.B., contributes a report of the Medical Transactions of the Nile Expeditionary Force to Khartoum in 1898. Enteric fever and dysentery prevailed to a considerable extent among the troops in the Soudan. The report gives a brief account of the number and character of the wounds received in action and some useful observations on the best type of building

[1] Army Medical Department. Report for the year 1898. With Appendix. Vol. xl. London: Printed for Her Majesty's Stationery Office by Harrison and Sons, St. Martin's-lane, Printers to Her Majesty. 1900. Price 2s. 6d.

[2] The two previous notices were published in THE LANCET of May 12th, 1900, p. 1384, and June 9th, 1900, p. 1675, respectively.

for hospitals, the most serviceable unit for field hospitals and many points connected with medical administration in the field. There are several other papers connected with field operations in West Africa; an elaborate report on enteric fever in Pietermaritzburg; and one on the method of preparation and control of anti-venomous serum (antivenene), with experiments by Major D. Semple, M.D. R.U.I., R.A.M.C., Assistant Professor of Pathology at Netley, who, accompanied by Major R. W. S. Lyons, M.D. R.U.I., I.M.S., and Surgeon O. W. Andrews, M.B. Durh., R.N., proceeded to the Pasteur Institute at Lille and placed themselves under a course of instruction by Dr. A. Calmette and his assistant, M. Guérin. The experiments and observations were most carefully conducted and the report is compiled with much scientific detail. Major Semple has also another paper on matters that came under his observation at the Pasteur Institute in Paris.

ASYLUM REPORTS.

Surrey County Asylum, Brookwood (Annual Report for 1899).—The average number of patients resident in the asylum during the year amounted to 1080 and comprised 437 males and 643 females. The total cases admitted during the year were 260 patients, of whom 121 were males and 139 females. The greatest number resident on any one day was 1118, and the least was on the last day of the year—viz., 999. Mr. James E. Barton, the medical superintendent, states in his report that "for the greater part of the year the asylum continued in a very overcrowded state and sleeping accommodation had to be provided on the floor. ..... Considering the crowded state of the wards and dormitories the general health of the asylum has been good throughout the year. Diarrhœa was more or less prevalent and five cases of typhoid fever occurred, one of which ended fatally. Influenza was very rife and many of the patients and staff suffered. Considerable inconvenience was caused by many attendants and nurses being off duty for lengthened periods—the debility following the attack rendering leave of absence to recuperate necessary." For a short time during the summer much anxiety and inconvenience were caused by the deficiency of the water-supply. For two days in August the institution was practically without water and for some time the canal water had to be used for laundry and flushing purposes. Of the 260 patients who were admitted during the year 123 were brought from their own homes and 109 came from workhouses; 11 were transfers from other asylums; 45 were re-admissions and included a male criminal lunatic who on expiration of sentence was transferred from the private to the pauper class. "The general type of the admissions was very unsatisfactory; the majority suffered from chronic insanity and many were dangerous to themselves or to others. Hereditary predisposition or congenital defect existed in nearly 34 per cent. ..... In addition to hereditary and congenital defect the chief causes of insanity were previous attacks, mental worry, and alcoholic intemperance. In 10 cases the insanity followed an attack of influenza, the chief feature in these cases being depression, apathy, and debility." During the year 114 cases—viz., 45 males and 69 females—were discharged as recovered, or 10·5 per cent. of the average number resident. The deaths during the year numbered 100, a proportion of 9·25 per cent. on the average population. This is a fairly low rate considering the number of feeble old people in the asylum. 11 died within a month of admission. Post-mortem examinations were made in 70 cases. Of the deaths five were due to senile decay, six to influenza, seven to cardiac disease, 10 to general paralysis of the insane, 12 to apoplexy and organic brain disease, and 18 to pulmonary phthisis. Four females and three male patients sustained serious casualties, all being with one exception fractures caused by accidental falls or struggles with other patients. The new bathroom for the female division of the main building and the bathrooms and lavatories for the medical officers were completed during the year. Many changes have occurred in the asylum staff, several of the best attendants, who were army reservists, having left to rejoin their regiments. These were granted leave of absence, and their posts are kept open for them. The new drainage system has been completed, with the exception of connecting the asylum drains with the district council's sewers at Woking, which will shortly be done. The Lunacy Commissioners in their report draw attention to the overcrowded state of the asylum and suggest the provision of an incinerator for the destruction of rubbish, as such an addition to the works would be most useful for the destruction by fire of typhoid fever patients' excreta which are now buried after treatment with carbolic acid.

Leicestershire and Rutland Lunatic Asylum (Annual Report for 1899).—The population of the asylum during the year consisted of 493 patients, of whom 232 were males and 261 were females. The admissions for the year amounted to 90 patients, of whom 48 were males and 42 were females. 16 of these—viz., 11 males and five females—were re-admissions. Mr. Rothsay C. Stewart, the medical superintendent, states in his report that of the admissions 22 patients were known to have had previous attacks and hereditary tendencies to insanity were traced in 17 cases. The epileptics numbered 12 and the general paralytics numbered six among the admissions. "22 cases were between the ages of 65 and 84 and in my opinion a fair proportion of these were more fit for a workhouse than an asylum." During the year 29 patients were discharged as recovered, 15 of these being males and 14 being females, or a total of 5·8 per cent. of the average number resident. The total number of deaths during the year was 62 and comprised 32 males and 30 females, or 12·5 per cent. of the average number resident. Of the deaths two were attributed to influenza, three to pneumonia, one each to colitis and diarrhœa, three to epilepsy, five to general paralysis of the insane, seven to cerebral softening or hæmorrhage, eight to cardiac disease, 11 to senile decay, and 12 to pulmonary phthisis. The mortality from phthisis is the highest in the tables given regarding the causes of death. There were five accidents involving fractured bones, but none of them ended fatally. Two female patients, both married women, gave birth to children while in the asylum. One of these has since gone out as recovered. Two male patients escaped during the year, one being subsequently recaptured. During the month of April, 1899, there was a severe epidemic of influenza among the staff, especially on the female side. At the outbreak of the war several of the attendants who had received orders as reservists left to rejoin their regiments and the work on the male side has had to be carried out with much difficulty. "Their places are kept open for them in case they wish to rejoin us, and the committee passed a resolution to pay half the wages to the wife of every reservist so long as he was on active service." The site for a new asylum at Narborough, consisting of 182 acres, was visited in January, 1899, by the Commissioners in Lunacy, and they gave consent to its purchase under certain conditions. Arrangements have been made with the borough authorities for the purpose of securing an efficient water-supply to the new asylum, and two houses have been purchased which will serve as residences for some of the staff. The profit derived from the farm and garden amounted to £330 in round figures. The aggregated expenditure on building and repairs accounts for the year has been £1691. The Lunacy Commissioners in their report state that the case-books and medical records are admirably kept, the former being illustrated by excellent photographs of the patients taken on their admission and discharge.

Public Health and Poor Law.

LOCAL GOVERNMENT DEPARTMENT.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Birmingham Urban District.—The estimated population of Birmingham for 1899 was 514,956, but Dr. Alfred Hill thinks that this may be some 22,000 too little. The marriage-rate for the year in question was 20·8 and the birth-rate 34·3 per 1000, only six of the great towns having a higher birth-rate than Birmingham. As regards death-rate Dr. Hill has recently adopted a system by which each death will, as far as is practicable, be referred to its own ward and locality, and by this means much more reliable data will be procured. For instance, during 1899 more than 1000 deaths were referred to the precise wards and streets from which the

deceased came instead of appearing as heretofore under the heading "Institutions." The general death-rate of the city after having been corrected in the above sense was for 1899 20·5 per 1000, and in reference to the relation between the insanitary conditions associated with poverty and the death-rate Dr. Hill furnishes the following very instructive figures:—

Proportion of houses at 3s. 6d. per week or less.	Death-rate per 1000.
None	17·1
From 0 to 25 per cent.	26·1
From 25 to 50 per cent.	32·7
Over 50 per cent.	37·6

When, too, this aspect of the question is examined in more detail it is found that the same general principles obtain. Although all these figures tend to show that poverty is *per se* a cause of high mortality Dr. Hill rightly points out that material improvement can be brought about by a rigorous supervision of the conditions under which the poor live; indeed, it may surely be laid down as one of the most important duties of the officers of sanitary authorities to help the poor who for many obvious reasons are unable with chances of much success to help themselves. In Birmingham the health visitors are able, it appears, to do most valuable work in this direction, and it must be a source of much satisfaction to Dr. Hill to be so well provided in this respect. As regards infantile mortality, the figures for 1899 are again high, no fewer than 193 infants out of every 1000 born having perished before the first anniversary of their birthday. There was an outbreak of diphtheria in connexion with certain schools during 1899 and as a result the schools had eventually to be closed on two occasions, the first closure having failed to check the outbreak. Enteric fever, too, became epidemic in the fourth quarter of last year, the number of cases, 417, being far in excess of those notified during the same quarter of recent years. Personal infection seems to have played a prominent part in the outbreak, no fewer than 72 cases being attributed to this agency. Moreover, unrecognised cases seem also to have been operative. So much was Dr. Hill impressed with the infectivity of enteric fever that he has since prevailed upon the Town Council to provide hospital accommodation for the isolation of cases of this disease. There can, we think, be little doubt that the element of direct infectivity has not even yet received due recognition at the hands of the medical profession as a whole. Diarrhœa and enteritis claimed as many as 1411 victims during the year, and Dr. Hill's investigations brought out the prominent part which filth and overcrowding bore in the causation of these diseases. There was also a far greater incidence of diarrhœa deaths in houses provided with "pan" closets than in those provided with water-closets. Notwithstanding this association we learn that but 199 pan privies were converted into water-closets during 1899, while there are some 31,000 of these unwholesome arrangements still existing in Birmingham. The medical officer of health suggests that with a view of bringing about improvement the council should bear a portion of the cost of replacing these structures. In his capacity of city analyst Dr. Hill reports that there is a steady decrease in the use of boric acid as a milk preservative, but that the use of formic aldehyde is steadily increasing. It is, too, of interest to note that the use of preservatives and the question of adulteration tend to go hand-in-hand. The amount of boric acid found ranged from 21 to 126 grains per gallon.

Edinburgh Sanitary District.—Sir Henry Littlejohn, the medical officer of health of this district, estimates its population to the middle of 1899 at 298,927, although, in common with all his colleagues, he is careful to point out that the possible revelations of the forthcoming census should not be lost sight of. The birth-rate was 27·49 and the general death-rate was 19·2 per 1000. There were three deaths from typhus fever, but these are to be regarded as a legacy from the 1893 outbreak. Accompanying Sir Henry Littlejohn's report are some capital charts illustrating the prevalence and mortality of different infectious diseases. As regards the local distribution of enteric fever and diphtheria, after discussing the incidence of each disease upon the Old and New Town respectively, he points out that on a basis of the statistics for 1898-99 "the chance of taking typhoid fever among every 10,000 of the population in the Old Town, New Town, and Southern districts may be expressed as about 13, six, and seven respectively. Whereas in regard to diphtheria the chances are, in the same order, six, 11, and 10," facts which illustrate, Sir Henry Littlejohn thinks, that in so far as Edinburgh is concerned "the class of property and of inhabitants in which diphtheria on the one hand and typhoid fever on the other are most prevalent is totally different." The question of milk as a source of infection is dealt with somewhat fully in the report before us by virtue of the fact that the circumstances connected with three outbreaks of scarlet fever and one of enteric fever were suspicious of milk-borne infection, although the evidence in certain of the cases was, as Sir Henry Littlejohn observes, insufficient for a definite conclusion to be arrived at. The responsibilities and difficulties of a medical officer of health in connexion with what may be milk-borne epidemics or outbreaks are well brought out by Sir Henry Littlejohn. The hardship associated with the stoppage of a supply cannot be lightly inflicted by a conscientious officer, and yet even the suspicion that the milk may be operative as a carrier of infection must cause him much anxiety. The common habit of milk vendors of mixing the milk derived from different farms and of purchasing an additional supply if their own runs out introduces many complications into etiological investigations which would otherwise be often relatively easy of solution.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 33 of the largest English towns 7006 births and 4004 deaths were registered during the week ending June 16th. The annual rate of mortality in these towns, which had been 18·4, 17·7, and 16·8 per 1000 in the three preceding weeks, rose to 18·0 last week. In London the death-rate was 17·4 per 1000, while it averaged 18·4 in the 32 provincial towns. The lowest death-rates in these towns were 9·4 in Cardiff, 11·3 in Norwich, 12·0 in Nottingham, and 12·7 in Croydon; the highest rates were 22·0 in Huddersfield, 22·9 in Sheffield, 23·7 in Liverpool, 24·8 in Salford, and 25·2 in Manchester. The 4004 deaths in these towns included 427 which were referred to the principal zymotic diseases, against 423 and 385 in the two preceding weeks; of these 138 resulted from measles, 108 from whooping-cough, 65 from diphtheria, 61 from diarrhœa, 29 from "fever" (principally enteric), and 26 from scarlet fever. The lowest death-rates from these diseases last week occurred in Plymouth, Cardiff, Swansea, Leicester, Bradford, and Gateshead; and the highest rates in Derby, Manchester, Salford, Blackburn, Huddersfield, and Hull. The greatest proportional mortality from measles occurred in Huddersfield, Leeds, Hull, and Sunderland; from scarlet fever in Blackburn; from whooping-cough in Croydon, Wolverhampton, and Oldham; and from diarrhœa in Birkenhead, Burnley, and Huddersfield. The mortality from "fever" showed no marked excess in any of the large towns last week. The 65 deaths from diphtheria included 28 in London, nine in Sheffield, four in Manchester, and four in Leeds. No fatal case of small-pox was registered last week in any of the 33 large towns. There were 15 small-pox patients under treatment in the Metropolitan Asylums Hospitals on Saturday last, June 16th, against 5, 7, and 11 at the end of the three preceding weeks; eight new cases were admitted during the week, against four in each of the two preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital at the end of the week was 1766, against 1784, 1760, and 1754 at the end of the three preceding weeks; 210 new cases were admitted during the week, against 216, 194, and 203 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 266 and 268 in the two preceding weeks, declined again to 257 last week, but were 29 above the corrected average. The causes of 43, or 1·1 per cent., of the deaths in the 33 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Birmingham, Bristol, Leeds, and in 15 other smaller towns; the largest proportions of uncertified deaths were registered in Leicester, Liverpool, Salford, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 18·6 and 18·3 per 1000 in the two preceding weeks, rose again to 19·9 per 1000 during the week

ending June 16th, and was 1·9 per 1000 above the mean rate during the same period in the 33 large English towns. The rates in the eight Scotch towns ranged from 17·2 in Greenock and 17·9 in Leith to 21·9 in Aberdeen and 27·0 in Perth. The 616 deaths in these towns included 23 which were referred to measles, 22 to diarrhœa, 21 to whooping-cough, six to scarlet fever, four to diphtheria, and two to "fever." In all 78 deaths resulted from these principal zymotic diseases, against 57 and 73 in the two preceding weeks. These 78 deaths were equal to an annual rate of 2·5 per 1000, which was 0·6 per 1000 above the mean rate for the same period in the 33 large English towns. The fatal cases of whooping-cough, which had been 25 and 17 in the two preceding weeks, rose again to 21, of which 17 occurred in Glasgow. The deaths from measles, which had been 16 and 19 in the two preceding weeks, rose again last week to 23, and included 14 in Glasgow and four in Edinburgh. The fatal cases of diarrhœa, which had been 25 and 7 in the two preceding weeks, rose again last week to 22, of which 12 were registered in Glasgow and five in Dundee. The deaths from scarlet fever, which had been one and six in the two preceding weeks, were six again last week and included two in Edinburgh. The fatal cases of diphtheria, which had been five, four, and three in the three preceding weeks, rose again to four. The two deaths from "fever" showed a marked decline from the number in the preceding week and were all registered in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 94, 104, and 106 in the three preceding weeks, declined again to 101 last week, and were 14 above the number in the corresponding week of last year. The causes of 26, or nearly 5 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 21·9 and 23·1 per 1000 in the two preceding weeks, rose to 23·8 during the week ending June 16th. During the past four weeks the death-rate in the city has averaged 23·5 per 1000, the rate during the same period being 16·7 in London and 18·6 in Edinburgh. The 160 deaths registered in Dublin during the week under notice were fifteen above the number in the preceding week, and included six which were referred to the principal zymotic diseases, against five, three, and 10; of these, two resulted from diphtheria, two from "fever," one from scarlet fever, one from diarrhœa, and not one from small-pox, measles, or whooping-cough. These six deaths were equal to an annual rate of 0·9 per 1000, the zymotic death-rate during the same period being 1·9 in London and in Edinburgh. The 160 deaths in Dublin last week included 26 of infants under one year of age and 36 of persons aged upwards of 60 years; the deaths of infants showed a decline, while those of elderly persons were 13 more than the number recorded in the preceding week. Two inquest cases and one death from violence were registered; and the causes of nine, or nearly 6 per cent., of the deaths in the city last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff-Surgeon J. Bradley to the *Galatea*. Surgeons: J. A. Keogh to Hong-Kong Hospital; J. Mowat to the *Northampton* for the *Calliope*; and H. B. Hull to the *Vernon*, for the *Chasseur*.

ROYAL ARMY MEDICAL CORPS.

Captain H. W. Vaughan-Williams, attached to the 3rd Battalion Grenadier Guards in South Africa, is ordered home for duty.

INDIA AND THE INDIAN MEDICAL SERVICES.

Captain W. W. Webb (retired) is granted the temporary rank of Major whilst acting as Secretary to the Army Medical School at Netley.

VOLUNTEER CORPS.

Rifle: 2nd Volunteer Battalion the Northumberland Fusiliers: Frederick William Wallace Wayte to be Surgeon-Lieutenant. 4th Volunteer Battalion the King's (Liverpool Regiment): Robert Fielding-Ould to be Surgeon-Lieutenant. 3rd Volunteer Battalion the East Surrey Regiment: Surgeon-Captain J. J. de Z. Marshall to be Surgeon-Major. 1st Bucks: Surgeon-Lieutenant F. J. Grindon to be Surgeon-Captain. 1st Volunteer Battalion the King's (Shropshire Light Infantry): Surgeon-Captain W. H. Packer to be Surgeon-Major. 3rd London: George William O'Flaherty Clark to be Surgeon-Lieutenant. 1st Volunteer Battalion the Gordon Highlanders: Surgeon-Lieutenant-Colonel P. B. Smith resigns his commission, with permission to retain his rank and to wear the uniform of the battalion on his retirement.

VOLUNTEER MEDICAL STAFF CORPS.

The Manchester Companies: Surgeon-Captain W. Coates to be Surgeon-Major (in command) on increase of establishment.; Joseph Farrall Wright to be Surgeon-Lieutenant.

THE CRISIS IN CHINA.

At the time of our writing great anxiety most naturally exists as to the very serious state of affairs in China. It seems certain that the Taku forts, after having been bombarded by the warships of the Powers, have been captured, but it is not by any means clear what has become of the composite relief force which was despatched under the command of Admiral Seymour for the succour and protection of Europeans at Peking and elsewhere. We are all hoping to hear of its arrival at Peking or of its safety somewhere.

At the present time all the political interest of this country is focussed on the Foreign Office, War Office, and Admiralty, which must have their hands very full of work. It is extremely fortunate for all concerned that the enmity of the Chinese is of an indiscriminate character and directed against all foreigners alike, and that the Chinese forts fired upon the war ships of the international fleet without distinction, and, as a consequence, that the action taken had to be a conjoint one on the part of all the naval powers concerned. A large military force (of the native army mainly) is being sent from India to China. This will throw a great deal of work upon the medical services of that country and a large number of medical officers now serving in India will be required to embark with and accompany the troops ordered to China. The officers of both medical services have for a long time past found full occupation with the extra work they have been called upon to perform in connexion with plague, pestilence, famine, and war, which have filled pages in the mournful history of India of late years.

The following have been ordered to proceed with the force about to embark at Calcutta for service in China:—British field hospital, No. 22, Bombay. Native hospitals No. 39, Jalandhar; 42, Ambala; 43 and 44, Lucknow; and 47, Mhow. No. 4 field medical store depôt. Native general hospital of 200 beds from Calcutta. Lieutenant-Colonel Bookey, I.M.S., will be the principal medical officer.

TRANSVAAL WAR NOTES.

A military hospital capable of accommodating 500 invalids from South Africa is to be erected at Alton, Hants.

Lieutenant Martin, Lieutenant Scott, and Lieutenant Siberry, all of the R.A.M.C., are returning to England from South Africa invalided. Major Wills, Captain Erskine, and Lieutenant Morris, invalided, have arrived in England from South Africa.

The General of Communications at Cape Town reports the following officers discharged from hospital for duty for the week ending June 3rd:—Civil Surgeons Rook, Blackwood, Turton, and Roe.

The following steamships have arrived at Southampton and have brought invalids from South Africa who have been admitted to the Royal Victoria Hospital, Netley:—June 7th, the *Orient*, with six patients; June 10th, the *Orotava*, with 337 patients; June 15th, the *Simla*, with 268 patients; and June 18th, the *Custodian*, with 92 patients.

TRANSVAAL WAR CASUALTIES.

Civil Surgeon R. T. Fitzhugh died from enteric fever at the Imperial Yeomanry Hospital, Deelfontein, on June 15th.

Civil Surgeon E. Smith, attached to the R.A.M.C., died from enteric fever at the base hospital on June 16th.

Surgeon-Captain A. E. Vidler, Imperial Yeomanry, is reported missing.

Civil Surgeon H. D. Davies, attached to the Welsh Military Hospital, died at Springfontein on June 15th.

The death of Mr. Thomas Jones, F.R.C.S. Eng., chief of

the Welsh Military Hospital, is announced in a telegram from Springfontein.

We announced last week the death at Bloemfontein from enteric fever, on June 7th, of Civil Surgeon H. Bryant, attached to the Royal Army Medical Corps. Mr. Hugh Arnold Bryant, M.R.C.S. Eng., L.R.C.P. Lond., of Shaftesbury, was a son of Mr. Thomas Bryant, F.R.C.S., who, we know well, will receive the sincere sympathy of the profession in the great loss which he and his family have sustained.

The eightieth session of the Army Medical School, Netley, will terminate on June 30th. Owing to the war in South Africa there will be no public distribution of prizes.

Correspondence.

"Audi alteram partem."

THE METROPOLITAN HOSPITAL SUNDAY FUND.

To the Editors of THE LANCET.

SIRS,—The many appeals which have recently emanated from the Mansion House in respect either of the war or the famine in India are being so liberally and bountifully met that I gravely hesitate to make yet another call upon the never-failing generosity of the inhabitants of London. I feel sure, however, that in reminding the public that next Sunday is "Hospital Sunday," when for the twenty-eighth successive year collections will be made in every place of worship for the hospitals and dispensaries of this vast metropolis, they will admit that even the exigencies of the war should not divert them from rendering that annual help which has become so all-important a part of the incomes of the medical charities. While the war has drawn from the hospitals of London the ready services of medical men and nurses who have rendered devoted and invaluable aid in dealing with the sick and wounded at the front, it has materially prejudiced the institutions financially through the urgent competition of the multitude of appeals associated with the campaign.

But the progress of the war has effected no diminution of the numbers of sick poor for whom the hospitals of London labour unceasingly. Never was there a time in the history of the metropolis when there was greater need than now for the rendering of increased help towards the maintenance of these noble institutions, of whom some 200 owe their existence solely to the voluntary offerings of the benevolent public. When one reads that hundreds of beds are unused for want of funds and that last year the expenditure on the hospitals exceeded the income by nearly a quarter of a million sterling it seems time—even in a year of unparalleled stress and anxiety—to make a special effort in behalf of the medical charities of London. It is suggested that £100,000 might be raised this year for this object. Towards this Mr. George Herring has given £10,000 down and promised £10,000 more if £90,000 is raised. I trust that the generous public, by their contributions on Hospital Sunday will enable me to take advantage of this munificent offer.

I would add that, as usual, donations from those unable to attend a place of worship on Sunday may be sent to me at the Mansion House for addition to the Fund.

I am, Sirs, your obedient servant,
ALFRED J. NEWTON, Lord Mayor.

The Mansion House, London, June 19th, 1900.

À PROPOS DU RAPPORT DE LA COMMISSION DE "THE LANCET" SUR LA PULPE "VACCINALE" GLYCERINÉE.

To the Editors of THE LANCET.

MESSIEURS,—Je voulais répondre complétement au rapport de la Commission de THE LANCET chargée d'étudier la pureté de la pulpe vaccinale glycérinée du commerce; mais le Dr. Hime a éclairci plusieurs points dont je voulais m'occuper. Je me contenterai donc de traiter les côtés de la question non envisagés par mon confrère.

Qu'il me soit permis d'abord de faire une rectification bibliographique. Le rapport dit:—

> To Copeman and to Chambon and St. Yves-Menard, working independently, apparently belongs the credit of determining that the addition of glycerine to vaccine lymph not only puts a stop to any multiplication of "extraneous" bacteria but actually in time kills non-spore-bearing organisms. ..... Independent testimony to this preservative and purifying action of glycerine has been offered by Leoni, Klein, Koch's German Commission, and other later observers, but little has been added to the results obtained by Copeman, working alone and with Blaxall, and by Chambon and St. Yves-Menard working with Strauss."

Il y a là une grosse erreur. Le Professeur Leoni, alors directeur de l'Institut Vaccinal de l'Etat[1] à Rome, qui dans les lignes précédentes est désigné comme étant venu corroborer la découverte du Dr. Copeman d'une part et de MM. Strauss, Chambon, et St. Yves-Ménard, d'autre part, est précisément celui qui le premier a démontré la destruction des microbes se trouvant dans le vaccin par l'action de la glycérine, et a dit qu'au vieil adage, "Vaccin récent bon vaccin, vaccin vieux mauvais vaccin," il fallait substituer cet autre, "Vaccin récent mauvais vaccin, vaccin vieux bon vaccin."

Dans "The Milroy Lectures" publiées en 1898, que j'ai actuellement sous les yeux, le Dr. Copeman s'exprime ainsi: "In a paper presented to the International Congress of Hygiene held in London in 1891, and subsequently published in the Transactions of that Congress, I called attention to a special method for the bacteriological purification and preservation of vaccine lymph. This method consisted in the intimate admixture of a given amount of lymph, or rather vesicle pulp, with a sterilised 50 per cent. solution of chemically pure glycerine in distilled water, and in subsequent storage of the resultant emulsion in sealed capillary tubes for several weeks." Or les recherches du Professeur Leoni datent de 1889, et sa première publication sur ce sujet a été faite en 1890.[2]

Dans le travail presenté par Leoni au Congrès de Rome[3]—travail dont j'ai sous les yeux la traduction manuscrite, écrite de la main de Leoni lui-même—cet auteur dit: "En faisant des recherches sur les causes qui déterminaient les susdits accidents pathologiques signalés comme conséquences et complications des vaccinations, depuis l'an 1889 j'ai eu l'occasion de démontrer que ces accidents devaient être attribués à des micro-organismes pathogènes qui ordinairement contaminent le vaccin animal et en particulier le vaccin récent. ..... Les agents de la contamination s'épuisent dans le vaccin conservé pendant quelque temps dans la glycérine. Le vaccin conservé dans la glycérine pendant 1 à 4 mois après la récolte représente le type du vaccin pur, d'une virulence uniquement spécifique." Cette question de priorité a été portée devant l'Académie de Médecine de Paris par M. Hervieux, qui a proclamé que le Dr. Leoni avait avant tous autres découvert l'épuration de la pulpe vaccinale glycérinée par le vieillissement.

A la page 1235 de THE LANCET, 1re colonne, le rapport s'exprime comme suit:—

> In one of the samples examined by us hairs of considerable length were found, which would indicate that the shaving had not been carried out sufficiently well in the first instance, and with shaving badly carried out thorough cleansing is impossible, the alternative interpretation of the presence of hairs being that they came from uncleansed portions of the animal and had—through inadvertence no doubt—been allowed to make their way into the pulp. The hairs in themselves are not harmful, but their presence indicates that certain precautions have not been taken.

La présence de poils dans la pulpe vaccinale n'indique pas que l'animal a été mal rasé; elle n'indique pas davantage que celui qui a récolté le vaccin ne s'est pas entouré de toutes les précautions nécessaires. La génisse la mieux rasée peut donner un préparateur de vaccin le plus soigneux une pulpe vaccinale remplie de poils. En effet, pendant les quatre,

[1] Cet institut a été supprimé depuis; le gouvernement italien estimant que l'institut de l'Etat nuisait aux instituts privés, et craignant en maintenant son institut d'arriver à voir disparaître ces établissements. L'avantage des instituts multiples se voit surtout lorsque se produit un affaiblissement momentané de la virulence vaccinale. Si dans une nation comme l'Angleterre par exemple il n'y avait qu'un institut d'Etat, et si pendant six mois—ce qui peut bien arriver—cet institut d'Etat ne récoltait que de la vaccine dépourvue de virulence (avec ou sans microbes) voici tout un pays privé des bienfaits de la vaccine pendant tout ce temps; tandis que s'il existe un certain nombre d'instituts, les particuliers ou l'Etat lui-même pourront en pareille occurrence recourir à les instituts. Or tous ceux qui s'occupent de la culture de la vaccine savent que, malgré toutes les précautions, il y a des moments où l'on n'obtient que du vaccin inefficace.

[2] Leoni: Revue d'Hygiène et de la Santé Publique, Août, 1890.

[3] Sur les Agents Spécifiques et Pathogènes du Vaccin, XIème Congrès International de Médecine, Rome, 1894.

cinq ou six jours que dure l'évolution des vésicules sur la génisse avant la récolte, les poils repoussent et quelquefois d'une façon très remarquable. Or la curette arrache une grande quantité de ces poils qui se trouvent ensuite dans la pulpe. Aucune précaution ne peut empêcher cela. Que l'on broie la pulpe avec le mortier, avec le broyeur du Dr. Chalybaüs ou avec n'importe quel autre instrument, les poils se retrouvent dans la pulpe préparée pour l'inoculation humaine.

Il y a cependant deux moyens d'enlever ces poils, celui qui consiste à les ôter un à un avec une pince; ce procédé est recommandé par le Professeur Layet[4] de Bordeaux. Il est peu pratique, car il demande un temps très long et pendant ce temps, malgré les précautions prises, les poussières de l'air peuvent tomber dans la pulpe et augmenter le nombre des microbes. Et parmi ces microbes il peut s'en trouver de nuisibles. Le second procédé consiste à tamiser la pulpe après trituration, sur un tamis métallique. C'est le procédé que j'emploie. La plus grande partie des poils reste sur le tamis, mais un certain nombre passent à travers et se retrouvent dans la pulpe. Beaucoup de tubes n'en contiennent pas, mais certains tubes peuvent en contenir plusieurs, très visibles, surtout si l'animal était de couleur foncée. Certains instituts, celui de Dresde par exemple, ne tamisent pas leur pulpe.

Je conclurai que tous ceux qui ont récolté ou vu récolter du vaccin savent qu'on recueille toujours des poils en même temps que la pulpe; que ces poils aseptisés autant que la couche épidermique constituant la pulpe vaccinale, ne présentent aucun inconvénient; que lorsqu'on récolte une très petite quantité de vaccin il est facile avec une pince stérilisée de retirer tous ou presque tous les poils; mais que lorsqu'on prépare de grandes quantités de pulpe la seule chose possible est de la tamiser après le broyage—le tamisage n'enlevant pas tous les poils—enfin qu'il serait plutôt nuisible d'exposer la pulpe vaccinale aux poussières de l'air pendant le long temps nécessaire pour débarrasser le vaccin de tous les poils. J'ajouterai enfin que j'ai en main quelques tubes provenant de l'Académie de Médecine de Paris, et que tous contiennent des poils.

A la page 1236, 1re colonne, le rapport dit:—

> The presence of a small quantity of blood, therefore, is not considered to be of any importance except, as we have pointed out, that it indicates that perhaps more care might have been taken in the collection of the sample. It may, however, be pointed out that it has been proved by recent experiments that the presence of blood, even in small quantities, in vaccine lymph exerts a marked deteriorating influence. The lymph rapidly loses some of its potency, the activity falls more rapidly, and extraneous organisms develop more readily than in lymph so collected that it is not tinged with blood.

On emploie deux procédés, dans les instituts vaccinaux, pour la récolte de la pulpe. Le premier consiste à saisir la peau, au dessous de chaque pustule à l'aide d'une pince hémostatique et à gratter la pustule avec un instrument quelconque. Ce procédé ne donne que peu de sang et avec un bon outillage, avec des pinces de formes différentes, on peut avoir une pulpe complétement blanche. Mais il faut beaucoup de temps et pendant ce temps le champ vaccinal préalablement aseptisé reçoit des poussières. On sait en chirurgie abdominale qu'une opération a d'autant plus de chances de donner un résultat favorable qu'elle a duré moins longtemps. Il en est de même pour la récolte du vaccin; la pulpe a d'autant moins de chance d'être souillée par les microbes de l'air que la durée du grattage est plus courte.

Dans le second procédé on gratte directement avec la curette. Il y a alors nécessairement du sang; plus ou moins suivant les animaux; suivant que la peau est plus ou moins congestionnée[5]; mais il y a toujours du sang si la récolte se fait sur l'animal vivant. A Cologne[6] la récolte se fait après la mort de l'animal, il n'y a pas de sang dans la pulpe par conséquent. On peut obtenir cependant du vaccin complétement blanc avec la curette sur l'animal vivant en grattant très vite et en ne revenant pas deux fois au même endroit; mais alors, ou bien on ne récolte ainsi qu'une partie du vaccin, le reste étant nécessairement mélangé de sang; ou bien on a une perte considérable. En résumé la curette permet d'aller très vite, ce qui, en dehors de l'économie de temps, évite en grande partie les souillures par les microbes de l'air; mais avec la curette on obtient le plus souvent un vaccin rosé ou rouge; c'est à dire un vaccin contenant du sang.

Je dois dire ici que la grande majorité des instituts vaccinaux[7] récoltent avec la curette sur l'animal vivant sans se préoccuper de la présence du sang. J'ai pu m'en rendre compte dans les visites faites par moi à un grand nombre d'instituts vaccinaux en France et à l'étranger.

Le rapport prétend que le sang, même en petite quantité, exerce une action nuisible très manifeste sur le vaccin et lui fait perdre rapidement ses propriétés et que les microbes étrangers s'y développent plus volontiers. Je m'inscris absolument en faux contre cette assertion. La virulence se conserve aussi bien—je n'ose pas dire mieux—j'en ai plusieurs fois fait l'expérience, dans le vaccin contenant du sang que dans celui n'en contenant pas, et le nombre des colonies se développant après ensemencement n'est pas plus élevé. Mais pour faire l'expérience il ne faut pas comparer un vaccin quelconque ne contenant pas de sang avec un autre en contenant; l'un peut être vieux et l'autre jeune; l'un peut être concentré et l'autre dilué. Il faut comparer deux vaccins de semblable dilution provenant du même animal; c'est ce que j'ai fait.

Le Dr. Hime a dit que les expériences de la Commission ne prouvaient rien au point de vue scientifique; c'est un peu vrai. On a pris sur le marché différentes marques, sans s'inquiéter de l'âge du vaccin, sans s'inquiéter de son degré de dilution, et on a tiré des conclusions de l'examen de les vaccins. Le rapport dit, p. 1235:—

> If the vaccine lymph has been carefully collected and glycerine has been allowed to act for a month the number of organisms growing in any of these media should be small. If the number growing is very large, that is, if it runs up to anything like 500 in the vaccine for a single inoculation, we suggest that the maker should be apprised of the fact that the glycerination is not being properly carried out and that any stock of lymph should be returned.

La dilution de la pulpe est variable suivant les instituts; les uns mettent: pulpe 1, glycérine 1; d'autres pulpe 1, glycérine 2; d'autres pulpe 1, glycérine ou eau glycérinée 4; d'autres pulpe 1, eau glycérinée 14 (Berlin)[8]; d'autres enfin pulpe 1, eau glycérinée 15 (Cologne)[9]. Si on ensemence des boîtes de Petri avec la dilution à 1 pour 1, il naîtra nécessairement 15 fois plus de colonies que si on les ensemence avec la dilution à 1 pour 15. Si par exemple la première donne 500 colonies, la seconde donnera 15 fois moins ou $\frac{500}{15}$ = 33 colonies environ. Or d'après le raisonnement de l'auteur du rapport de THE LANCET le premier tube serait mauvais et le second excellent; tandis que si les deux dilutions ont été faites avec une pulpe de virulence moyenne la première peut être très bonne et la seconde médiocre au point de vue des résultats cliniques. Je m'appuie pour dire cela sur des expériences personnelles publiées dans *La Gazette Médicale du Centre*. Dans les pulpes examinées par la Commission de THE LANCET, il y en a de dilutions très différentes, et il n'a pas été tenu compte de les différences. De même la Commission aurait pu s'enquérir de l'âge du vaccin qu'elle étudiait, cela aurait donné plus de valeur à ses études. La Commission aurait pu aussi—elle aurait dû même—si elle voulait établir une classification des vaccins d'après leur pauvreté en microbes, tenir compte de tous ses examens sur les vaccins de chaque provenance; elle n'aurait pas ainsi classé en tête une marque de vaccin, qui dans un examen antérieur présentait tellement de microbes qu'ils étaient incomptables. Il est vrai de dire que ce vaccin à microbes incomptables était peut-être excellent au point de vue de la virulence. Mais la Commission a négligé d'étudier la valeur réelle du vaccin.

Un autre point négligé par la Commission, c'est la présence dans les pulpes examinées des microbes spécifiques du vaccin, car, il faut bien le dire, s'il y a dans le vaccin des microbes indifférents ou nuisibles, il y en a aussi d'utiles; et tous les auteurs qui se sont occupés de cette question des microbes du vaccin savent qu'Antony a démontré qu'en ajoutant certains staphylocoques (micrococque porcelaine) à de la pulpe vaccinale on augmente sa virulence, tandis qu'on la diminue en ajoutant d'autres microbes, notamment certains bacilles. Le staphylocoque utile, d'après M. Antony[10] "donne naissance, sur agar, à des colonies aplaties, crémeuses, d'un blanc de porcelaine éclatant, tout à fait caractéristique,

[4] Layet: Traité Pratique de la Vaccination Animale, Paris, 1889.

[5] Lorsque la peau est très congestionnée le vaccin est généralement moins virulent.

[6] "It goes to the Local Government Board on the preparation and storage of glycerinated calf vaccine lymph, with an introduction by the medical officer. London, 1897; p. 14.

[7] Voici ce qui se passe à Dresde: "The pulp is collected by scraping with a Wolkmann's spoon, but as Dr. Chalybäus goes over the same surface again and again a not inconsiderable amount of blood becomes mixed with the epithelial scrapings." (Report to the Local Government Board, &c., p. 12) A l'Académie de Médecine de Paris le vaccin contient du sang, comme le prouve sa couleur rouge.

[8] Report to the Local Government Board, &c., p. 10.

[9] Report, &c., p. 15.

[10] Hubié: Précis de la Vaccine et de la Vaccination Modernes, 1re partie, page 22, Paris, 1895.

pouvant atteindre un centimètre de diamètre, lorsqu'elles sont peu nombreuses et bien isolées. Sur gélatine ce coccus pousse lentement, les colonies n'apparaissent qu'au bout de 5 à 8 jours; la liquéfaction du milieu nutritif est très lente et ne se produit parfois qu'après 15 jours de culture. Ce microcoque existe dans le vaccin vivant d'une façon constante." "Le microcoque porcelaine ne se rencontre pas sur l'animal avant la vaccination (Antony).[11] Il ne s'y rencontre pas avant qu'on ait pratiqué les inoculations. Il semble provenir *du vaccin uniquement;* car sauf le cas de pulpes glycérinées très anciennes, il se rencontre constamment dans cette matière virulente." "Au point de vue bactériologique un vaccin peut être réputé de qualité irréprochable lorsqu'on n'y trouve, après frottis de la pulpe sur un tube d'agar, que des colonies de coccus porcelaine." "Les principales espèces microbiennes étrangères qu'on y rencontre sont le *staphylocoque jaune*, qui s'y trouve en proportion le plus souvent infinie; la persistance de celui-ci en trop nombreuses colonies doit faire suspecter le vaccin conservé; quelques micro-organismes d'impureté (saprophytes) vulgaires, tels que le bacillus subtilis, le bacille de la pomme de terre, &c. Ces derniers produits si répandus dans les étables, existent dans le vaccin en faible proportion. Leur présence ne semble avoir aucune action défavorable sur l'évolution vaccinale (Antony)."

D'après les recherches d'Antony un seul microbe, parmi ceux qu'on trouve d'ordinaire, pouvait être nuisible, lorsqu'il existe en trop grande quantité; le staphylocoque jaune. D'après mon expérience personnelle ce sont les vaccins les plus riches en staphylocoques jaunes qui produisent sur l'enfant les vaccins suintant, empesant le linge et se couvrant de croûtes irrégulières, et la vaccine ulcéreuse. D'autres microbes nuisibles, pathogènes, peuvent aussi se rencontrer accidentellement. Aussi eut-il été plus utile de rechercher quelles étaient les bactéries contenues dans le vaccin, que de les compter: *non numeranda, sed ponderanda.*

J'ai dit qu'il y avait des microbes utiles dans le vaccin, je veux revenir sur cette question. Si Antony a augmenté la virulence du vaccin en ajoutant des microcoques porcelaines, Maljean[12] a été plus loin; il a obtenu sur les animaux des vésicules vaccinales en inoculant des cultures de ce microbe. Mon savant ami Boureau[13] et moi dans un certain nombre d'expériences avons obtenu des vésicules vaccinales, 1° en inoculant à des génisses tous les microbes du vaccin réunis; 2° en inoculant les microcoques porcelaines; et nous n'avons rien obtenu en inoculant isolément ou réunis les microbes autres que le microcoque porcelaine. Ce qui prouve une fois de plus que sans ce microbe il n'y a pas de vésicule vaccinale.

Un certain nombre d'auteurs avaient déjà avant Maljean obtenu les vésicules caractéristiques en inoculant des cultures de vaccin. Je citerai Quist[14] en 1883; Voigt[15] en 1885; Carmichael en 1887; Garré[16] en 1887; Grigorien en 1889; Voiton en 1890; Ruete[17] en 1891 et en 1893; Buttersack[18] en 1894; Martin et Ernst en 1895. J'ajouterai que le Dr. Copeman[19] avec le Dr. Blaxall ont eux-mêmes isolé un microbe, qui inoculé aux génisses donne des vésicules vaccinales typiques.

On m'objectera que des pulpes glycérinées vieillies, ne contenant plus de microbes, produisent par l'inoculation des vésicules vaccinales aussi bien que des pulpes fraiches, riches en microbes. A celui je répondrai que les pulpes très vieilles ne produisent que des résultats nuls ou incomplets; que presque toujours dans les pulpes qui restent actives on trouve des microbes et surtout le microcoque porcelaine; mais que, même si on n'arrivait pas à cultiver ce microbe sur les milieux de culture ordinaires cela ne prouverait pas son absence, mais simplement que l'influence de la glycérine et du temps l'a rendu inapte à se cultiver sur les milieux ordinaires, et que pour le cultiver il faut le faire passer à nouveau par l'animal vivant. De même certains produits, liquides ou solides, dans lesquels on ne peut déceler le bacille de la tuberculose, donnent naissance à la tuberculose lorsqu'on les inocule au cobaye.

Le Dr. Hime a insisté avec raison sur ce point que la virulence de la pulpe vaccinale a une plus grande importance que le nombre des microbes. Ce que l'on doit demander au vaccin c'est avant tout qu'il préserve de la variole. Du vaccin trop épuré peut ne produire aucune vésicule et exposer les personnes inoculées à une fausse sécurité. Si l'on inocule un enfant pour la première fois et si l'on n'obtient aucun résultat, on peut recommencer la vaccination jusqu'à ce qu'on ait obtenu des vésicules; mais si l'on revaccine un adolescent ou un adulte déjà inoculé, et si le vaccin ne réussit pas, on sera très porté à admettre que le sujet subit encore l'influence de l'inoculation antérieure; surtout si le même vaccin a donné des résultats chez l'enfant. Mais ce qui prouve que cet adulte resterait exposé à contracter la variole, c'est que si on le vaccine avec une pulpe fraiche très virulente l'inoculation produira des vésicules.

Je résume ma manière de voir en disant: dans les instituts vaccinaux l'inoculation des génisses, la récolte et la préparation du vaccin doivent être conduites avec l'asepsie la plus complète, les différentes opérations devront se faire dans le plus court espace de temps possible pour éviter les contaminations par les germes de l'air. Les étables devront être lavées très fréquemment avec des liquides antiseptiques[20] ou désinfectées avec des vapeurs de formol. Chaque récolte de pulpe vaccinale, après avoir été glycérinée, devra être soumise à l'examen bactériologique, mais bien plutôt pour déterminer les espèces microbiennes qu'elle contient que pour compter les colonies qu'elle peut produire.[21] Si cette pulpe contient des microbes nettement pathogènes comme le streptocoque de l'érysipèle, elle devra être détruite; si elle contient un grand nombre de staphylocoques jaunes elle ne devra être employée qu'après vieillissement et après s'être assuré cliniquement qu'elle produit de la vaccine normale et qu'elle a conservé une grande virulence.

L'essai clinique devra être considéré comme plus important encore que l'examen bactériologique, car seul il montre le degré de virulence du vaccin et la tendance des vésicules à donner des croûtes irrégulières et de la vaccine ulcéreuse. On ne devra employer qu'un vaccin d'une virulence parfaite.[22] Pour les inoculations d'enfants et en dehors des épidémies de variole on pourra préférer la pulpe vieillie donnant lieu à une aréole moins étendue et à une réaction inflammatoire moins grande; mais pour les revaccinations et surtout en temps d'épidémie il est indispensable d'employer une pulpe jeune très virulente, capable de donner presque autant de résultats pour les revaccinations que pour les vaccinations.

J'ajouterai qu'il est une chose qui pour moi n'est pas démontrée, à savoir qu'un vaccin peu virulent—ancien ou récent—donnant des vésicules peu nombreuses et peu développées protége autant de la variole qu'un vaccin récent très virulent, donnant des vésicules très développées à chaque inoculation, et produisant sur une inoculation par coupure dès le troisième jour une vésicule unique de la longueur de la coupure et à bords rectilignes.

Enfin pour terminer je ferai part à la Commission de THE LANCET d'une opinion devant peser d'un certain poids en la matière et se trouvant absolument en désaccord avec les idées émises par le rapporteur: je veux parler de l'opinion de l'Académie de Médecine de Paris. Je transcris ci-dessous la notice qui accompagne chaque envoi de tubes par l'Académie de Médecine.

"*Avis très important.* (*Le vaccin de génisse se conserve difficilement.*) Prière d'employer le vaccin en pulpe dans les dix jours qui suivent la réception, pour éviter les insuccès et l'altération possible de la pulpe, altération qui pourrait occasionner des accidents septicémiques."

(Signé) DOCTEUR EDMOND CHAUMIER.

[11] Antony: Recherches sur la Valeur Relative des Différentes Préparations Vaccinales, Archives de Médecine et de Pharmacie Militaires, 1893, tome xxii., p. 465 et suivantes.

[12] Maljean: Recherches sur les Microbes du Vaccin, Recueil de Médecine Militaire, et Gazette Hebdomadaire de Médecine et de Chirurgie, 1893.

[13] Boureau et Chaumier: Les Microbes du Vaccin, Congrès de Médecine de Nancy, 1896. Bulletin Médical, 1896; Gazette Médicale du Centre, 1896.

[14] Quist: Mémoire sur la Culture Artificielle du Vaccin; Petersburger Medicinische Wochenschrift, 1883, et Gazette Hebdomadaire de Médecine et de Chirurgie, Février, 1884.

[15] Voigt: Untersuchungen über die Wirkung der Vaccine Mikrococcen; Deutsche Medicinische Wochenschrift, 1885.

[16] Garré: Uber Vaccine und Variola; Deutsche Medicinische Wochenschrift, 1887.

[17] Ruete: Cultures Pures de Vaccin de Génisse; Bulletin Médical, 1891, p. 498, et Société de Médecine de Hambourg, Mai, 1893.

[18] Buttersack: Les Microbes de la Variole et de la Vaccine. Berliner Klinische Wochenschrift, 1894, et Bulletin Médical, 1894.

[19] The Milroy Lectures, 1898.

[20] Chaumier: Congrès de Bordeaux de l'Association Française pour l'Avancement des Sciences.

[21] Toutes les récoltes de l'Institut Vaccinal de Tours sont soumises à l'analyse bactériologique par le Docteur Boureau, et ne sont utilisées qu'après cet examen et après l'épreuve clinique.

[22] Sur près de cent mille tubes faits chaque année à l'Institut Vaccinal de Tours, il n'y a pas plus d'une dizaine de tubes qui produisent pour des causes diverses des résultats nuls ou incomplets.

THE RELATIONSHIP OF MALARIA AND THE MOSQUITO.

To the Editors of THE LANCET.

SIRS,—I may have been reading papers recently, both medical and lay, incorrectly, but I have gathered from them one and all that the unequivocal dictum of those who have been investigating the etiology and prophylaxis of malaria is to the effect that (1) the mosquito is the alternative host with man of the malaria parasite; (2) that malaria is conveyed to man by the mosquito and in no other way; and that (3) as a logical consequence it is only necessary to take precautionary measures against the malaria-bearing mosquito to be rid of malaria. In the *British Medical Journal* of Feb. 10th Professor Grassi is reported to have given it definitely as his opinion, "No man, no malaria; *no mosquito, no malaria*"; and Professor Celli and other investigators appear to be of the same mind. In THE LANCET of May 12th (p. 1400) Major Ronald Ross, I.M.S., writes: "The mosquito theory scarcely stands in much need of further proof; it was established long ago. We already know that malarial fever is communicated by gnats." Dr. Patrick Manson in a lecture reported in THE LANCET of May 19th, p. 1419, also says: "..... There cannot be the slightest doubt that the mosquito acts the part of transmitting agent as well as definitive host of the malaria parasite." In the Report of the Malaria Expedition of the Liverpool School of Tropical Medicine are these lines:—

> To sum up, although some points of importance still require investigation it has been shown that certain species of gnats are definite hosts of the hæmamœbidæ; that the parasites are conveyed from diseased to healthy vertebrates (intermediary hosts) by these insects; and that the definitive hosts of the human parasites are certain species of anopheles.

There seems to be such unanimity of opinion on the subject in the minds of these investigators that pamphlets have been issued with instructions to those inhabiting malarious districts as to the best methods of diagnosing the malaria-bearing species of mosquito, for capturing it and destroying its larvæ in more wholesale fashion and for avoiding its bite (would that it were possible!). These are the only precautions recommended. Nothing is said as to telluric, paludal, or atmospheric conditions except as they relate to the mosquito. It is the mosquito or nothing—*aut anopheles aut nullus*. That mosquitoes may frequently act as alternative or intermediary hosts with man of the malaria parasite seems now a well-established fact, but this is a widely different theory to the hard-and-fast doctrine that a species of "anopheles" is solely responsible for all malarial fevers in mankind. It is to this last dogma that I demur. The problem of malarial infection appears to me to be far too complex for so simple a solution and the question being of such great importance it is desirable to be fully satisfied with the new creed before abandoning the old.

As a sometime resident in different parts of South America, a country where neither malaria nor mosquitoes are entirely unknown, and as a native of the Fens where ague, twin brother of malaria, was common until a few decades ago, I find it difficult to believe that malaria is *only* acquired from a certain species of mosquito and that all telluric and atmospheric conditions are factors that may be safely disregarded. That I am not entirely alone in my doubts may be seen by reference to medical works of recent date, such as "Health Abroad," edited by Dr. E. Hobhouse, where other causes, such as a chill, a wetting, the turning over of virgin soil, exposure and fatigue in malarious districts, are credited with causing fever as well as direct infection from mosquitoes. Also in the *Times* of May 28th in an article "From the Vaal River to Pretoria" the writer speaks of Pretoria thus: "Its heavy drawback, indeed, is its periodical insalubrity. Whether owing to minute malaria in the soil, or to the unmentionable filthy habits of the genuine Boer, Pretoria is liable to epidemics of deadly jungle fever, as I learned to my bitter cost. The miasmas at sunset, attended by a bone-piercing cold, are especially dangerous." But it is now implied that the "miasma" is an obsolete myth. When I was in British Guiana the houses of sugar-planters and overseers were always built upon piles or pillars to raise the living rooms some 10 or 12 feet above the miasma which was supposed to rise after sunset and to be particularly dangerous as pregnant with the malaria poison. Most travellers in malarious districts prefer to sleep when camping out raised some distance above the ground and generally sling their hammocks so, while in the navy landing parties are instructed to make elevated platforms with boughs on which to sleep and are supplied with small axes for the purpose. Kingsley, in "Westward Ho," describes how immunity from fever was obtained when the men slept beyond the reach of the miasma. We are now told that the real reason of the danger of sleeping on or near the ground is that the mosquito is a low flyer and a night feeder. "The mosquito," it is said, "does not mount high in the air." My own personal and very painful experience does not confirm this statement. Mosquitoes were my constant companions to whatever height above the ground I ascended and were as unremitting in their attentions upon the first-floor as upon the ground floor and by day as well as by night. They may be observed upon ceilings, rafters, and roofs, and on the leaves of trees as well as near or on the earth or water. But it is solely upon this assertion that a popular and universal belief some centuries old is discredited and the mosquito theory brought in triumphant as amply explaining the miasma.

Then, again, in the same colony there was a very general and well-founded belief that young men freshly arrived from the temperate climates, although they would be bitten more voraciously than the older residents, yet were not very liable to malarial fever until they had resided about a year in the country. Yet on the mosquito theory one would think that these fresh arrivals bitten from head to foot and living amongst men constantly down with fever, would become infected within a week of their arrival on a plantation.

To break fresh earth and turn up virgin soil has long been known to be a prolific cause of malarial outbreaks. The workmen and soldiers employed by the French in road-making during their Madagascar campaign succumbed in large numbers to malaria. It was the same with the workmen on the Panama Canal and Colon Railway where every "sleeper" was said to have cost a life. The mortality from malarial fever during the construction of the Colombo and Candy Railway was also exceptionally high. But these facts, we are now informed, are explained by the formation of little pools and puddles as the workmen dig, in which "anopheles" lays its larvæ (*vide* p. 30 of the Report of the Malaria Expedition). "Faith," as Mark Twain's schoolboy said, "is believing what you know ain't so." In 1865 at Hong-Kong the 11th Regiment stationed there and engaged on guard duty while the Kairoon docks were being made suffered from a severe outbreak of malarial fever which was attributed to the turning up of the earth. Other troops stationed there while the new Murray barracks were being constructed were also the victims of a virulent epidemic of malaria. Deaths were so numerous that salutes ceased to be fired and bells to be tolled so depressing were they in their frequency. Also in the same place in 1891, 1892, and 1893 the Royal Engineers were engaged in excavations at the depth of from 12 to 15 feet for the emplacement of heavy guns and while engaged in this work were constantly the victims of malaria. At the time the turning up of the earth was considered to be the invariable cause of the epidemics; and it is a noteworthy fact in the last instance that the Argyll and Sutherland Highlanders also stationed there at the same time, who were not engaged in the excavation works, did not suffer similarly but enjoyed a comparative immunity. Moreover, the soil was a kind of decomposed granite, almost like sand. "*After heavy rain no water remained.*" I quote the words of my informant, an officer of the Engineers engaged on these works at the time.

It is very difficult in the face of facts like these and without further evidence to accept the "anopheles" theory and to discard telluric and atmospheric agencies. It is hard to believe that the mosquitoes would make a differential diagnosis between the Engineers and the Highlanders. Moreover, Hong-Kong is not a place particularly infested with mosquitoes. In the Ashanti expedition in 1873–74, in an area between Cape Coast Castle, Elmina, and Accra to Kumassi, about 120 miles inland, there was, I am informed by an officer who accompanied the expedition, "any amount of malarial fever but practically no mosquitoes," although in the regions to the right and left of this district mosquitoes abounded. The *Simoon* was the hospital ship to this expedition. Those who were first sent on board her derived much benefit, but in rather less than three months both the naval and the military officers condemned her and declared that malarial fever was endemic on board. Wounded men without fever would get fever from going on board. The *Simoon* was therefore sent away and the *Victor*

Emmanuel replaced her, but in this ship the same effects were not observed. If mosquitoes were the means of conveying infection in the first vessel from the fever-stricken to the free, why were they not also in the second?

That the whole question bristles with difficulties is exemplified, I think, by the following episode related to me by a naval officer who accompanied the expedition and subsequently commanded it. In the spring of 1876 a punitive expedition was sent up the Niger from H.M.S. *Active*. The party ascended the river in a steamer somewhat larger than an ordinary Dover and Calais boat. The expedition was away between six and eight weeks. There were a few mosquitoes, but they did not trouble much. Quinine and spirit were served out every morning and the men were particularly well fed and cared for, always sleeping under cover and rarely being ashore more than three or four hours at a time. There was practically no sick list except of the wounded and the men were very fit and well from first to last. The men returned to the *Active*. She steamed out to sea and within a week afterwards nearly all of those who had taken part in the expedition were down with fever of a severe type. About six died and many were invalided home. Yet the fever did not break out during the many weeks that the expeditionary force was up the river, but only afterwards when the ship was cruising about at sea and when improved conditions prevailed. Nor was the morning dose of quinine discontinued when these men returned to their ship. Quinine was regularly served out daily to the entire ship's company all the time the vessel was on the West Coast. Are we to believe that "anopheles" was directly responsible for this outbreak or for its spread if a single case had developed? Assuming, for the sake of argument, that there were mosquitoes on board and that they became infected from feeding on one or two cases and so infected others, still this would not explain why only the men of the expeditionary force were attacked and why the rest of the crew remained free, which was the case.

And what are we to say of the etiology of ague in the Fen districts of this country? Was that also conveyed to man only by gnat-bites? The gnats remain still in some numbers but ague has disappeared. The past generation suffered much from it. Tertian and quartan ague were then endemic in many districts, but with the better drainage of the Fens, with the dykes, pumps, and syphons of later years, it has gone for ever, as in many other parts of Europe. Is it at present so absolutely certain, as Professor Grassi maintains, that the malaria parasite cannot exist in some phase or other of its life's cycle in the soil or in water?

In many tropical regions malaria is most rife whenever heavy rains succeed a spell of dry weather or wherever rank vegetation is decomposing. And in newly taken up countries, such as Mashonaland and Rhodesia, as the long coarse grass gets eaten down and improved by stock malaria tends to be less prevalent. That these conditions are of importance solely because they affect the multiplication or diminution of a certain species of mosquito seems somewhat difficult of belief.

Up the river Parana in South America mosquitoes teem in their millions and billions and probably every branch of the family is there strongly represented—"anopheles," "culex," and all their near and distant relations. Sporadic cases of malaria, or "chuchu," as the natives call it, are not unknown, and in Tucuman, a province somewhat west of the main river, malaria is common—owing, Dr. G. H. Pennell thinks, to its being a large sugar-producing district *where the soil is much disturbed* in its cultivation. Yet the countries adjacent to the Parana are not malarious, although hundreds of square miles of swamp and forest line its banks and those of its innumerable tributaries. Paraguay, Entre Rios, and Uruguay are extremely healthy. Moreover, people in these countries are great travellers and on this account it is inconceivable to me, if the mosquito theory is a sound one, why the entire Parana region is not as fever-stricken as any on earth. As a logical sequence it should be. Mosquitoes are there, every tribe of them, and just an occasional case of malaria to initiate a devastating epidemic. Yet no region in the world is much healthier!

The fact that an off shore wind from a malarious coast will sometimes induce an outbreak of malarial fever amongst the crews of ships lying out in estuaries or even passing some 50 miles from land seems to prove conclusively that the atmosphere has some intimate connexion with the disease even if malaria is not airborne. The argument that such ships probably harbour mosquitoes which are the real cause of the outbreak hardly holds good because it is only the *land* breeze which does the mischief, and it is difficult to understand why the land breeze should suddenly stimulate "anopheles" to activity any more than a wind from another direction; whereas on the assumption that malarial fevers are intimately related in some way or another with paludal, miasmatic, telluric, or atmospheric conditions this fact is intelligible enough. This latter view is still held in the navy, for it is customary at certain times of the year in ships on the West Indian station for the petty officers to go round at night and see that the awnings are up to protect the men sleeping on deck from the land breeze and to prevent them throwing off their coverings as they feel tempted to do on sultry nights. If the mosquito theory is to hold sway this duty is evidently a work of supererogation and a farce.

When one considers the phases in the life-history of some of the larger organisms, such as the frog and butterfly, to mention no others, it seems conceivable that the hæmoplasmodium malariæ of man found also in "anopheles" may still exist elsewhere under some other form as yet unrecognised.

> There are more things in heaven and earth, Horatio,
> Than are dreamt of in our philosophy.

The only theory to my mind that at all fits the case in some of its bearings is that in certain regions of the earth the parasite of malaria, by whatever name it may be called, disguised under whatever form, or in whatever phase of its existence, is endemic and ubiquitous, just as the tubercle bacillus is in other parts, and either readily finds a habitat in the human body and there lies dormant or is prepared constantly for invasion if occasion offers. (That the parasite can remain quiescent within the body is evidenced by the long intervening periods that sometimes elapse between attacks of fever, often of many years.) We know that this is the case with many micro-organisms and that each of us carries, so to speak, a "viper in his bosom" in the shape of various bacteria, harmless so long as we keep in health, but ready to turn and injure us whenever they can overpower the protective phagocytes, the constabulary of our tissues.

I do not, however, venture to propound any theory of my own, but I would suggest from some of the foregoing considerations that the case for the mosquito being in all instances the direct and sole agent in the production and transmission of malaria has not been satisfactorily made out as yet and that it behoves us for awhile to suspend our judgment and not to abandon the precautions against malaria that the accumulated experience of generations and the dictates of common-sense have taught us in favour of one line of prophylactic treatment only, to say nothing of its feasibility—i.e., that of dealing with the mosquito. Another source of malarial infection has certainly been discovered, thanks to the untiring researches of the workers in this field, but that it is the only source of infection needs yet, I think, some further proof.

I am, Sirs, yours faithfully,

Charles-street, W., June 5th, 1900. J. H. DAUBER.

MONOGAMY IN ITS RELATION TO LONGEVITY AND THE DISEASES OF LATE LIFE.

To the Editors of THE LANCET.

SIRS,—In his interesting article on this subject in THE LANCET of June 9th Dr. Campbell seems to neglect the importance of longevity to the human race as a whole and to ignore the fact that death and renewal of individuals is of vast importance in the existence and advance of any race of beings. I question whether Nature's law is a tendency to death "soon after the cessation of reproductive life," but rather "as soon as the individual has ceased to be of use to the race." If the former were the law bees and other practically neuter beings could not exist, and it is difficult to see how women could be as long (or even longer) lived as men, for that they should inherit the length of years of their fathers, and so defeat the law, does not seem a satisfactory explanation. On the other hand, it is difficult to exaggerate the importance of woman's post-reproductive life to the race in the past and amongst the less civilised at the present day. During these years she provided food and raiment, nursed the sick not only administering but also preparing her various remedies, and by her skill and knowledge

was of more immediate importance to the well-being of the race than her youthful sister. Modern civilisation and invention have destroyed her usefulness, and it is possible, but scarcely probable, that the increase of carcinoma, which especially attacks women during these years, is Nature's first effort to remove these useless individuals!

Let me hasten to add, with Dr. Campbell, that I do not advocate any startling measure of reform for the employment of women, but if women in their youth could be taught some useful employment, they might spend these years to their own good and to the advantage of the race. His suggestion of a selection of parents has often been discussed before, and is a fascinating idea, but we have not, and probably never shall have, either the power or the skill to carry it out.

I am, Sirs, yours faithfully,

Ottery St. Mary, June 15th, 1900. CLAYTON JONES.

"THE RELATIVE VALUE OF SYMPTOMS IN ACUTE PERITONITIS."

To the Editors of THE LANCET.

SIRS,—I value very highly Mr. Mansell Moullin's appreciation of my article on "The Relative Value of Symptoms in Acute Peritonitis" and regret that he cannot agree with my main contention as to the necessary presence of true rigidity of the abdominal walls in that condition. May I point out that the position stated in my paper does not depend upon the three cases mentioned therein, these being only given as more or less typical, but upon more than 20 years' careful examination of hundreds of cases. On the other hand, Mr. Mansell Moullin brings forward one case which was not, so far as his communication goes, proved by post-mortem examination. This case was, he says, septic and may well have been one of septic intoxication or septic poisoning, in which the initial or repeated doses of poison totally preclude from the first all reactive or protective efforts on the part of the peritoneum, which I conceive are the essence of peritonitis. Peritonitis in these cases never occurs; it has never any chance of existence.

Mr. Mansell Moullin mentions abdominal cramp as a close imitation of the characteristic rigidity of acute peritonitis, and I quite admit this, but such cramp is, after all, only an imitation fairly easily detected, and one which, I am sure, would never deceive Mr. Mansell Moullin or any other abdominal surgeon whose sense of touch and whose patience were fully trained.

I confess that I cannot agree with, or even admire, the ingenuity of the logic which declares that our diagnosis will be the more reliable in proportion as we realise the total unreliability of the factors which constitute it. But, after all, this is a principle which can neither be proved nor disproved by the mere *ipse dixit* of any one man. If my surgical and gynæcological *confrères* would look for and record the presence or absence of this symptom in each case the question would soon be settled. In the meantime I can confidently recommend the test, whatever may be thought of the explanation, which I have ventured to propound.

I am, Sirs, yours faithfully,

Manchester, June 18th, 1900. E. STANMORE BISHOP.

To the Editors of THE LANCET.

SIRS,—Many will agree with Mr. Mansell Moullin that Mr. Stanmore Bishop's rigidity of the abdominal walls is not absolutely diagnostic of peritonitis and also is not essential; that a marked rigidity may be found in such cases as gastric ulcer or hysteria without peritonitis; and that rigidity may not be present during the first stage of shock in perforative peritonitis nor even at all during some cases of peritonitis due to perforation in typhoid fever.

Mr. Bishop omits in his catalogue the more important fact mentioned in Mr. Treves's graphic description, "abdominal respiration ceases." This is invariable even when rigidity is absent; if general peritonitis exists the whole abdomen is motionless during respiration except that a slight reversed motion may be caused in the upper part by dragging in of the abdominal wall by the exaggerated thoracic movement in inspiration. Abdominal respiration is not abolished by any of the colics or intestinal pains and its absence seems therefore a better sign to rely on than rigidity.

I am, Sirs, yours faithfully,

Brighton, June 19th. WALTER BROADBENT.

HORSE AMBULANCES.

To the Editors of THE LANCET.

SIRS,—The subject of the provision of a horse ambulance in towns having been raised in a recent issue of THE LANCET, may I relate to you what has been done in this direction in Oxford, which, so far as I know, is the only place where facilities of this kind are available? About 20 years ago a private subscription was got up and a horse ambulance purchased. It has been kept at one of the livery stables which has the advantage of a telephonic service and is thus in connexion with the hospitals and with the Acland Nursing Home. Anyone can have the use of it for about an ordinary cab-fare. Three years ago, the first ambulance having become somewhat worn out, a second horse ambulance was obtained, also by private subscription, and is in constant use. A nurse and medical man can travel with it when necessary. It is also used for local military purposes in connexion with the Oxfordshire Yeomanry.

I am, Sirs, yours faithfully,

Oxford, June 19th, 1900. HORATIO P. SYMONDS.

To the Editors of THE LANCET.

SIRS,—I notice that the subject of public ambulances has been mentioned more than once in THE LANCET recently. May I be permitted to point out to you that we have had such a one in Oldham for about two years or more. It was presented to the town, is kept at the fire-station, horsed by the fire brigade horses, and worked by the firemen, all of whom hold St. John Ambulance certificates. It turns out within one minute of receiving a call. One evening during the severe weather last winter in a blinding snowstorm there were no less than five calls for its services.

I am, Sirs, yours faithfully,

Oldham, June 20th, 1900. EDWARD KERSHAW.

PLAGUE IN AUSTRALIA.

(FROM A SPECIAL CORRESPONDENT.)

THE returns of plague in Sydney for the week ending May 5th are as follows: remaining at the beginning of the week, 75; admitted, 38; died, 10; discharged, 4; remaining at the end of the week, 99. The total cases are now 193 and the total deaths are 63; the number discharged recovered is 31. Total "contacts," 1130; "contacts" remaining, 235; cases among "contacts," 7. It is doubtless understood that the "cases among contacts" are those of persons who fell ill at the isolation ground, having been removed there merely as housemates of the primary patient; it must not be supposed that in any case there was good reason to think that the infection had been received by direct communication from the primary patient. Thus, as regards the first four contact cases mentioned at the beginning of March (D——), the infection was clearly received about the same time in the same place; in the second instance the second patient fell ill immediately after his removal; and in the third and fourth cases now added illness began 24 and 48 hours after removal respectively. The true history of the infection of five of the eight members of the D—— family seems now to have been got from the father since his recovery. It was at first thought that the four children had been in the habit of playing on a very extensive rubbish heap to which wastes continued to be removed by the city council long after the wharves from which much of it was taken had become a manifest centre of infection. Subsequently it appeared probable that the children never had been on this heap at all. Lastly, D——, after his recovery, said that a certain little outhouse in the yard attached to his cottage, which was used to hold both dirty linen and discarded bits of carpet, &c., was a place in which the younger children played; that as soon as the youngest child had been removed to the hospital where he died he cleaned out this place and found under the clothes and rags four dead rats. It has been noted already that these premises were full of fleas in extraordinary number and that the children were covered with their punctures from head to foot; it is now to be observed that the only members of the family attacked were the younger children and their father who cleaned out the place in which they often played.

Thus it seems that evidence of infectiousness is as much

wanting at this date as it was earlier in the epidemic. From this point of view, however, the following occurrence has more interest. A girl was taken from a cottage, occupied by a small family, all of whom were removed as contacts; after five days' detention, during which the cottage was disinfected and cleansed, the family returned. The patient had but a moderate illness and an inguinal bubo which did not suppurate; she was discharged at the end of 23 days in very good health and rejoined her family. Ten days later a little boy was attacked with plague. As far as can be learned he must have received the infection in the cottage from which he had not been away, and there is no doubt at all as to the disinfection and destruction of the original patient's personal clothing, all other material in the cottage having been disinfected by steam or otherwise and having been used by the family (including the second patient) during all of the 33 days between the removal of the girl and the attack of the boy, except the first five of them. The cottage was very well kept and stood in a good street in a poor neighbourhood; it was properly connected with the sewers and with the water-service. But it was a survival from older days; it was built of weatherboard, the joists almost touched the earth, and the floors were rotten and shaky. Rats had been present before removal of the first case, but in no great number, and it was said that none at all had been seen since the family had returned. The locality was within a few hundred yards of the rubbish-tip already mentioned. The floors have not yet been torn up, but this will be done, and half a dozen similar cottages in the street will be presented to the local authority as unfit for habitation.

The past week has yielded more cases by nine than any previous week, and it is now evident that the localities in which the infection is present extend to a much greater distance from the primary infected area than hitherto. Nevertheless, a large proportion of cases can be connected with that area by employment within it, although the number occurring in rather distant neighbourhoods, whose infection cannot at all be accounted for on that hypothesis, steadily increases. Plague rats have now been found in many different neighbourhoods also, but the connexion between them and new cases has not been as thoroughly examined as it was hoped would be the case, the scarcity of rat-catchers or the disinclination of any there may be to continue their business at this critical juncture being surprising.

The bacteriologist to the Health Department (Dr. Frank Tidswell) has observed the bacillus in the intestinal contents of a flea taken from a plague rat. Simond is doubtless right in saying that fleas taken by him from rats in India were grey; whether there be any flea peculiar to the rat here and distinguishable by others than entomologists from ordinary kinds is an unanswered question. All that can be said is that those so far examined have presented the usual appearances, being from reddish-brown to blackish-brown in colour, and of all sizes up to that of the monster popularly associated with dogs. Valerio-Galli's remarks on this topic[1] are hardly convincing and in one respect at least unphilosophical; his rat fleas would not bite him; but that proves nothing, for no flea whatever will bite the present writer, and many other people doubtless, nor does Netter[2] for a similar reason contribute anything of importance to the subject. There is hope for some, therefore, that they may escape infection by fleas even without the aid of the neat velvet bracelets and anklets containing formic aldehyde in some form, which an ingenious French manufacturer has put upon the Paris market.

The specimen of Yersin-Roux serum referred to in my last letter turns out to have been forwarded in response to the well-meant interference of the Consul-General for France. The Pasteur Institute had already sent to the Agent-General at London four litres for transmission to the Government and they are expected to arrive very soon. Other consignments of the ten litres asked for are to follow. Everyone was puzzled by the occurrence thus explained, our French fellow citizens who are cordially liked and deservedly esteemed not less than others. Nor was it seriously supposed that the directorate of the Pasteur Institute would disregard the cry of their fellow men in distress without mention of some necessity by which they were compelled.

[1] Archiv für Bakteriologie.
[2] La Peste et son Microbe, p. 73.

The Government has undertaken resumption of the line of wharves so often referred to in this connexion, and of property at the back of them, with a view to reconstruction; the expenditure will be between £3,000,000 and £4,000,000 sterling. Quarantining and cleansing of successive areas still continue. It is noteworthy that only one of the men engaged on this work has taken the disease; the number employed has usually, or on an average, probably been 1500, but it has run up to near 2000, and in several weeks has been 2000.

May 7th.

THE UNIVERSAL EXHIBITION AT PARIS.

(FROM OUR SPECIAL CORRESPONDENT.)

SURGICAL INSTRUMENTS AND FURNITURE.

GROUP III. is devoted to letters, science, and the arts, and Class 16 within this group is entitled Medicine and Surgery. This class situated at the extreme end of the westerly wing of the main building on the Champ de Mars and close to the Eiffel Tower. On entering at this point and turning to the left the word "Surgery" is written upon one of the partitions; but on passing within I was at once assailed by anxious inquiries as to my eyesight, and one eager exhibitor was particularly desirous that I should try a pair of pebble spectacles. Gently releasing myself from these allurements I was next subjected to suggestions that I really ought to provide myself with some elegant opera-glasses; but I pushed towards a row of trumpet-mouthed phonographs which, though they sang or spoke, yet did not urge me to buy. Now I came upon a discreetly walled-off partition so built that the passing crowds could not see what might be exhibited within. Doubtless this was an arrangement to prevent nervous persons from being shocked by coming suddenly upon some sinister anatomical model or specimen. Making a mental note of this delicate discretion, I braced up my nerves and entered the compartment, quite prepared to see loathsome models of lupus or some other repugnant malady. To my surprise I found myself in a delightful oasis of theatrical scenery. On all sides there were small stages about two feet square, brilliantly lighted from within, and on each stage one of the most elaborate and romantic scenes from a well-known play or opera. It was very pretty, very interesting, very ingenious, and made me feel quite sorry that I was not a theatrical critic. There was, however, not even any indication as to how these model stages were warmed or ventilated, so I had no pretext whatsoever for remaining in this charming little exhibit; and then it occurred to me that, as Class 16 was undoubtedly in this part of the building, it must be in the large gallery above and not on the ground floor. Having ascended the nearest flight of stairs I found myself at once face to face with a life-size model of an individual, perfect in every respect, excepting that he had no skin and therefore exhibited his muscles, nerves, and the like. There was no walling off here, no discreet curtain, which only those who were interested in such subjects might remove. The anatomical wax models are fully exposed and no one passing near can avoid seeing them, but they are not numerous. Close by, and labeled "Microphotography of the Broca Hospital, gynæcological service of Dr. Pozzi," is a large collection of coloured photographic enlargements of microbes. There is here the subject-matter of a useful study, and this exhibit will not fail to attract considerable attention among practitioners who treat more especially the diseases of women.

Close by are numerous exhibits connected with the treatment of various diseases, such as, for instance, the Maison Puy-Laurent for bandages, trusses, &c. This firm has a contrivance by which the pad of a truss is replaced by an india-rubber bag. When in proper position the rubber bag can be filled by a funnel with liquid plaster which, drying in from 10 to 15 minutes, constitutes a very exact model of the shape and size of the pad required. M. A. Maugeon, M. E. Morin, and M. C. Regnier, all of Paris, exhibit suspenders, bandages, stockings for varicose veins, corsets, and orthopædic apparatus, &c. Messrs. Mantelet et Fils have seamless elastic stockings and M. Abrioux has orthopædic boots and shoes. M. A. Bruyge makes wooden legs and other artificial

limbs, and M. F. Lacroix makes ventilated orthopædic supports, &c. M. L. Gaillard has a very large assortment of sounds, bougies, and cannulæ that can be easily sterilised; while Messrs. Bühler et Cie have some small flexible metal tubing through which gas, water, or vapour can be passed under pressure. This tubing can be bent round and round so as to form a cone or cap that may be placed on the head of a patient and when fed with a cold current of water would replace an ice-bag. In the same manner the tubing may be twisted round a limb and applied for many and various purposes.

Amid many other exhibits of this character the firm of Messrs. Flicoteaux, Borne, and Boutet show an operating-room and all the appropriate furniture. On an enamelled hardware slab or table four thick glass basins are placed. Above, suspended to the wall, four glass reservoirs provide water for these basins which flows from a small nickel tube and the water is turned on by placing the foot on a lever below. In the centre of the table there is a trapped drain-pipe to carry away the dirty water. It all appears to be quite aseptic; but on passing my hand underneath this washstand I found that it was only the upper outer surface that had been enamelled and that dust was adhering to the hardware which underneath had been left in a rough and unglazed condition. How far this is porous I cannot say, but all who have had experience in testing drain-pipes are aware that hardware is porous and does absorb water. If enamelling is necessary above where dirt can be seen and washed away, it is still more necessary underneath where dirt and dust cannot be seen. The operating-table close by is probably the simplest table in the Exhibition. It consists of a small slab of opaline—i.e., a mixture of glass and porcelain. By a wheel and crank it can be lifted or made to slant, but to hold the limbs in a bent position attachments have to be affixed to this one rigid slab. Simplicity of structure and the aseptic nature of the material used is about all that can be said in favour of this operating table. But the same firm exhibits a stretcher on wheels, designed by Dr. Monprofit, and so contrived that the patient can be replaced in his bed without being lifted off the stretcher. The patient lies on two thin slabs of enamelled metal held close together by an iron frame. This can be lifted off the wheels and placed on the bed. The frame is then unscrewed and the slabs, thus released, can on each side be easily drawn away from underneath the patient. Messrs. Flicoteaux, Borne, and Boutet have supplied many well-known hospitals with their various products.

M. S. Favre of Paris, exhibits a new pocket bistoury. It is in a small case, only three inches long, containing a handle and six different sorts of blades. He also shows sterilisers in which ebullition is produced very rapidly.

M. R. Mathieu of Paris has several interesting exhibits, and notably the Déchery cautery. This is composed entirely of metal. The hollow handle is charged with ether. A little spirit lamp is fitted to the case which contains the cautery. When warmed over this lamp the platinum point becomes red hot in two minutes and remains in that condition while the supply of ether lasts. There are also some very ingenious crushing clamps and clamps for seizing, without injuring, the intestines. For the latter purpose there is on one side a metal oval-shaped ring covered over with an indiarubber glove-finger. Opposite a small rod is also covered with indiarubber. The handle, like that of a pair of scissors, brings this rod against the soft centre of the indiarubber covering on the oval side. Thus the pressure of metal against metal is avoided. This firm has distinguished itself in the manufacture of dynamometers. For the most part they have the shape of a vesica about five inches long by two and a half inches in the centre or broadest part. It can therefore be conveniently held in the centre of the hand and squeezed. The novelty consists of clockwork in the centre which records the number of seconds the pressure continues and gives a loud tick when the muscular effort ceases to produce any further result. A handle records on a dial and in grammes what that pressure has been. By passing a finger from each hand inside the extremities of the oval or vesica the power of pulling asunder can then be tested, the result being similarly recorded. To other dynamometers a vesica is attached, large enough to be placed under the arm or between the legs, and the power of squeezing the legs together or of pressing the arm against the side can be ascertained. Thus four different tests can be made with the one instrument. This is often necessary. By holding the dynamometer in one hand and squeezing I found that the representative of the firm who showed me these instruments was very much stronger than I am. But when I took the instrument with both hands and tried to pull it asunder it was demonstrated that my pull was stronger than his. Thus one single test would have conveyed a totally false impression of our respective strengths. These instruments cost from 35 francs to 150 francs. Colonel de Rochas, Director of the Polytechnic Military School, in his "*Exteriorisation de Motricité*," remarks that persons holding Eusepia Pallidino's hands generally complained of great exhaustion at the end of 20 to 30 minutes. This led him to employ a dynamometer of this description, and he thus discovered that after experiments during which remarkable phenomena are said to have been produced the persons present had between them lost enough strength to make up the strength of an average adult. There is also a dynamometer made for the purpose of estimating with great precision the amount of pressure necessary to reduce hernia. Finally, it may be noted that this firm also manufactures the apparatus used for straightening malformations due to Pott's disease or spinal curvatures, and which is employed at the celebrated hospital of Berck-sur-Mer.

Unfortunately for these exhibitors they are very badly situated. The Exhibition is so large, people are so soon tired that many have not the courage to go up to the galleries. When, however, they do ascend to these upper regions they soon discover that they are much nearer to the glass roof of the great gallery and therefore feel the heat much more intensely. In fact, the atmosphere is that of a hothouse. The ventilating fans that are exhibited and stand idle in their particular section might here be put to a very useful practical test. Downstairs in the British section, I found but one exhibitor of hospital furniture and surgical instruments. This was the firm of Messrs. Down Brothers, and they have manufactured a new operating table expressly for the Exhibition. The table is on wheels, or rather on large improved casters that are on ball bearings like those used for bicycles. Therefore the table, in spite of its great weight and the weight of the patient who may be on it can be moved about with the utmost facility and with hardly any effort. Similar casters are used for all the other furniture and are particularly useful for the very heavy instrument cabinets. These, in consequence of their weight, are apt to be left indefinitely in their position against a wall. Consequently the space behind does not get cleaned. But now there will be no excuse for not washing and dusting behind as well as in front of all such furniture, since it is so easily moved. With regard to the operating table, if it is convenient on certain occasions that it should be moved without effort, it is essential that during an operation it should be absolutely steady. Consequently there is a lever arrangement by which the casters are raised and the table then rests on broad, flat feet and a very strong push will not move it. The next point is that due account has been taken of the fact that operating surgeons, like other mortals, vary in stature. The table is so built that its general level can be raised or lowered for a distance of nine inches so as to suit each individual operator, whether tall or short. The surface is of perforated nickel-plated metal. Underneath this there is a metal trough bed draining in the centre. The head, trunk, and limbs of the patient can be raised or lowered and put in any position. There is also a rest that can be attached to any side of the table, to support a leg or an arm or to serve as an instrument tray. The framework of the table is made of tubes, through which hot water can be made to circulate. The attachments are so arranged that the whole or only a part of the table can be heated, and if any portion of the body is raised so are the hot-water tubes; therefore the patient is not removed from the heat-giving surfaces. There is an extra trough for douching in lithotomy, &c., and this can be added to either end of the table. All the joints are of gun-metal, this, with nickel and glass, being the only materials employed for the operating room furniture. Where a glass shelf is used the corners are rounded off, so that everything is easily cleaned. The screw portion for raising the operating table is covered over, so that dust cannot lodge in the indentures. The framework of all the furniture is of drawn metal and there is no soldering, so that it cannot come to pieces. A large glass cabinet contains many beautiful instruments, notably a new cutting forceps for the resection of

ribs, the blade pressing down on a slot which is open in the centre. Then there are Beter's bone forceps. When the bone is properly gripped the forceps can be fixed by means of a screw contrivance in the handle. The operator's hands are then free to apply the sutures, &c. The lithotrite suggested by Mr. H. M. N. Milton of Cairo may also be seen here. It is so arranged that the crushed stone can be evacuated through the handle without withdrawing the instrument. The entire exhibit takes the form of a model operating theatre. The floor is of mosaic set in hard cement on a metal base and the walls are of glazed tiles fixed also in cement. Many other interesting objects are to be seen here, making altogether a very complete surgical exhibit.

Of course there is much more appertaining to Class 16 shown elsewhere, both in the French section and among the exhibits of other nationalities, but a description of what has been omitted must now be deferred to another occasion.

Paris, June 18th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Home for Epileptics, Maghull.

THE annual meeting in connexion with the "Home for Epileptics" at Maghull, near Liverpool, took place on June 16th, under the presidency of the Lord Mayor. There were 120 patients in the institution at the beginning of 1889. During the year 20 patients were discharged, 4 had died, and 27 were admitted, leaving 123 inmates at the end of 1899. Arrangements had been made with the Education Department for carrying on during the past winter an evening continuation school and also for giving technical instruction to such patients as were capable of receiving it. The school had proved a great success and the managers are in hopes of receiving a Government grant towards the expenses. The plan of remunerating patients able and willing to undertake fixed duties had proved satisfactory, and in many instances the remuneration received had been equivalent to the value of their maintenance, the cost of rent and nursing being provided partly by payments of friends and partly by donations. To enable them to carry out the project the committee are desirous of a sum of £750 to meet the initial expenses of buildings, implements, and stock, and a guarantee fund of £250 a year for five years towards rent and nursing. It would be possible to purchase a suitable farm in the neighbourhood of the present "home" if a sum of £5000 could be raised for that object. In order to bring about a better social classification of the patients it had been decided to acquire a portion of the park land adjoining the "home" and to erect a suitable building, with nurses and servants, and for this purpose the committee had appealed for £3500. The finances were in general in a satisfactory condition. The medical records of the home showed a decided improvement in very unpromising cases. The institution at Maghull, which mainly owes its origin, among others, to Dr. William Alexander of the Royal Southern Hospital and the Workhouse Hospital, was established 11 years ago and was the first of its kind in the kingdom. The Lord Mayor said that a portion of the Manchester money of the David Lewis Trust was to be devoted to the establishment of a similar home near Manchester. The Lord Mayor promised to give a donation of £50 to the Maghull Home.

Hospital Saturday Fund: Ladies' Street Collection.

The annual street collection made by ladies on behalf of the Hospital Saturday Fund took place on June 9th. The collection realised £837 10*s.* 11*d.*, which is about equal to the sum collected last year.

Death of Mr. Alfred Fisher, M.R.C.S. Eng., L.R.C.P. Edin.

Much regret is felt at the death of Mr. Alfred Fisher, which took place on June 17th from pneumonia after a very short illness. Up to the last few days he had been apparently in robust health, but he was taken suddenly ill during the night of June 14th. Mr. Fisher, who was only 37 years of age, was formerly house surgeon at the Northern Hospital. He was of an extremely affable disposition and much sympathy is felt for his widow and child.

The Health of St. Helens in 1899.

The annual report on the health of the borough of St. Helens, by Dr. Drew Harris, the medical officer of health, stated that the birth-rate for 1899 was 35·97 per 1000 of the population, or 2·52 per 1000 lower than the preceding year. The death-rate was 19·16 per 1000, or 0·27 per 1000 above the previous year, and 2·2 per 1000 below the average of the preceding 10 years. It was the lowest death-rate except two on record for the borough. A satisfactory feature of the report was the great saving of infant life during the year which had been brought about by the expenditure of time and money which the Health Committee had devoted to the subject. The rate of mortality among infants during the year was 157 as against 172 in the preceding year, and a mean rate of 172 in the last 10 years. The rate for England and Wales last year was 163. This was the first occasion upon which the infant mortality rate in St. Helens had been lower than that of England and Wales. In the early part of the year a list of all the births registered in the borough was obtained from the registrar in order that the female sanitary inspector might visit the parents and leave instructions as to feeding. A depôt upon the model of that at Fécamp and at Havre was opened later in the year for the supply of sterilised humanised milk, which had proved a great boon to the infants of the poorer class. The death-rate from typhoid fever was 0·49 per 1000, or 0·03 below the mean for the previous 10 years. The number of cases notified was 221, but the mortality was relatively smaller than in the previous year. The estimated population was 86,588; the total births were 3115, and the deaths were 1700.

June 19th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Medical Association and the Superannuation of Medical Officers.

A DEPUTATION consisting of Sir Thornley Stoker and other members of the Irish Medical Association, waited on Mr. John Redmond, M.P., at the Imperial Hotel, Dublin, on June 18th with respect to the superannuation of medical officers. Dr. Joseph Smyth of Naas stated the case on behalf of the Irish Poor-law medical officers with much ability. He remarked that the Superannuation Bill now advocated by the Association provided that the allowance should be paid not from the rates but out of the contributions made by the medical officers themselves. Mr. Redmond, in replying to the deputation, said that the objects of the Association met with his entire sympathy and he promised, moreover, that when the Bill came before Parliament the support of the Irish national party might be relied upon.

The British Association.

On June 13th a public meeting summoned by the Lord Mayor in response to a numerously signed requisition was held in the council chamber of the town-hall, when, on the motion of the Earl of Shaftesbury, D.L., seconded by the President of Queen's College, it was decided to renew the invitation to the British Association to visit Belfast in 1902. A representative deputation was appointed to present this invitation at the forthcoming meeting of the Association in Bradford. The last meeting in Belfast was in 1874 when the President (Professor Tyndall) and Professor Huxley gave their famous addresses.

Londonderry City and County Infirmary.

A special meeting of the committee of management of the Londonderry City and County Infirmary is to be held next week to consider the question of the proposed rearrangement of the medical staff. Previously to the death of Sir W. Miller, there was only one extern medical officer, but a sub-committee who were appointed to consider the future management of the institution have after careful consideration and after having received suggestions from the medical men of the city and county of Londonderry recommended that there should be an honorary visiting staff and a resident surgeon. They also advise that the resident surgeon should have full charge of the management and administration of the infirmary as directed by the committee of management and give assistance to the visiting staff in all cases. They recommend that the extern staff should consist of two physicians, two surgeons, and one anæsthetist.

The Belfast Hospital for Sick Children.

Dr. Brian O'Brien has been appointed assistant surgeon to the Belfast Hospital for Sick Children in place of Dr. James Lynass, resigned.

June 19th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Experimental Treatment of Tuberculosis by means of Raw Meat and Meat Juice.

M. Richet and M. Héricourt, pursuing the line of research which they have already undertaken and which I mentioned in a previous letter, communicated to the Society of Biology at the meeting held on June 2nd the latest results which they have obtained. They inoculated a certain number of dogs with tuberculosis and separated them into three groups. The dogs composing the first group were fed upon ordinary food and died at the end of three or four weeks. Those in the second group were fed upon cooked meat and lived very little longer than did those in the first group. Those in the third group were fed solely upon raw meat and remained in perfectly good health at the end of six months from the beginning of the experiment. The curative influence which a raw meat diet possesses over tuberculosis experimentally produced in dogs is thus established, for it is almost unknown for a tuberculous dog living under ordinary conditions to last for more than three months. Raw meat juice appears to have the same action as that of raw meat. M. Richet and M. Héricourt have also ascertained that this effect of raw meat has a prophylactic as well as a curative action. Two dogs which had been fed for many months upon raw meat and meat juice were inoculated and are alive at the present moment despite the fact that after the inoculation they were taken off the special diet and put upon ordinary diet. Control dogs inoculated at the same time, but which had not been prepared by being fed upon the special diet beforehand, are dead long ago. The two observers have also investigated the dose necessary to obtain success. One dog received a daily dose of raw meat in the proportion of five grammes per kilogramme of body weight. Another received 12 grammes per kilo., a third 32 grammes per kilo., and a fourth 64 grammes per kilo. The first dog died while the three others remained well. M. Richet and M. Héricourt therefore consider that to preserve a dog from the effects of an inoculation of tubercle it must be given a minimal dose of from 10 to 12 grammes per kilo. of body-weight every day. The active principle is evidently a soluble substance, for if the meat is chopped up and pressed to deprive it of its juice, a second pressing after moistening with water produces an absolutely inactive fluid, even after the meat has been allowed to soak for 24 hours. These facts confirm the results formerly obtained by Malassez and Vignal who laid stress upon the importance of muscular "opotherapy" in tuberculosis. They had noticed that tubercle never developed in muscles and concluded that meat juice contained some plasma inimical to the evolution of tubercle.

The Increase in the Paris Supply of Drinking Water.

The supply of water from the springs of Loing and Lunain, works for which have been in progress for many years, are now complete. The aqueduct is 100 kilometres in length, the quantity of water delivered is ample, and the works cost 24,000,000 francs. By this means even during great spells of heat Paris will have a plentiful supply of drinking water, and the fears which have been entertained of a water famine during the Exhibition are shown to be unfounded.

The Small-pox Epidemic at Lyons.

The epidemic of small-pox at Lyons still continues. The populace is very averse to revaccination, and to lessen the necessity for the workman losing half a day's work by having to attend at the vaccination station the public vaccinators are offering vaccination at workmen's houses, going from door to door to try to persuade the people to profit by revaccination. M. Roux and M. Pic have tried this plan in the working-class quarter, but have been met everywhere by formal refusals. Out of 700 hands employed by one firm only 10 have consented to be revaccinated and that only by a medical man specially supplied by the head of the firm. M. Rafin, acting in similar circumstances, has only been able to revaccinate 20 out of 300 hands. He considers that the dry sweeping (*balayage à sec*) of staircases which is the custom in Lyons is a fruitful cause of the dissemination of infectious diseases and M. Delore makes the same remark in so far as regards the custom of beating carpets in courtyards.

The Geographical Distribution of Goitre in France.

At a recent meeting of the Academy of Medicine M. Poncet of Lyons communicated to the Academy the results of some statistics drawn up by M. L. Mayet relative to the distribution of goitre in various districts of France. The figures on which the statistics were based were taken from the returns furnished by provincial councils of the physical examination of recruits enrolled each year. These documents, which cover the period 1887–1896, have enabled M. Mayet to divide the departments of France into six groups classified according to the number of cases of goitre per every 1000 conscripts. The classification shows plainly that goitre is not distributed in a haphazard way, for the departments most effected are grouped in blocks occupying the regions of the Alps, the Pyrenees, the Central Plateau, the Jura, and the Vosges. The departments of the Aisne and the Orne alone show up as black spots in otherwise unaffected districts. M. Mayet has compared these figures with others for past periods, the one from 1816 to 1825 and another from 1836 to 1845. He concludes from these that the distribution of goitre is still much the same as before but that its amount has diminished, especially within the last 50 years. The number of those affected with goitre in France has diminished but it is not known exactly in what proportion. M. Mayet considers that probably the total number of goitrous people is between 375,000 and 400,000.

June 19th.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the Congregation on June 14th the following degrees were conferred :—

Degree of Doctor of Medicine.—J. W. Cornwall, Trinity; and W. E. Alston, Clare.

Degree of Bachelor of Medicine.—E. W. Hedley, King's; and R. G. Trevor, Clare.

Degree of Bachelor of Medicine and Bachelor of Surgery.—W. S. Darby, Trinity; J. H. Tallent, St. John's; G. F. Lobb, Caius; S. P. Pollard, Caius; J. W. Malim, Christ's; T. Burfield, Emmanuel; and D. G. Hall, Emmanuel.

Degree of Bachelor of Surgery.—L. J. Paton, Caius.

At the examinations for medical and surgical degrees, Easter term, the following candidates were successful in the subjects indicated :—

FIRST EXAMINATION.

Part I., Chemistry and Physics.—W. A. Alexander and E. E. Atkin, Caius; R. L. Barwick, Christ's; H. Beckton, M.A., Clare; A. E. Bellars, Magdalene; P. Black, Caius; C. W. Bowle, Trinity; K. Burgess, Caius; G. G. Butler, Emmanuel; D. V. Cow, Trinity; F. D. Crew, Emmanuel; J. N. F. Fergusson, St. John's; A. C. D. Firth, Trinity; R. L. Gamlen, Caius; H. P. B. Gough and G. F. Greenwood, Sidney Sussex; J. M. P. Grell, H. Selwyn; H. S. Hall, Pembroke; G. S. Haynes, King's; A. W. Hayward, St. John's; R. A. P. Hill, Caius; W. H. Hodgson and R. Hoisington, Christ's; C. W. Hutt, Trinity; T. A. Jones, Caius; W. D. Keyworth, H. Selwyn; F. P. Luard, Downing; A. Morris, A. H. Owen, and M. Phillips, Caius; W. O. Pitt, Emmanuel; S. B. Priston, St. John's; A. C. H. Rothera, Emmanuel; C. E. F. Salt, Pembroke; F. S. Scruby, H. Selwyn; E. F. Skinner, Corpus Christi; P. H. Smith, Pembroke; P. L. Stallard, Caius; B. S. Taylor, M.A., Clare; R. S. Taylor, Downing; H. A. R. E. Unwin, H. Selwyn; J. A. Venning, Trinity; G. L. Webb, Caius; C. W. H. Weekes, H. B. Weir, and W. de L. Winter, Trinity; and H. N. Wyman, Caius.

Part II., Elementary Biology.—W. A. Alexander and E. E. Atkin, Caius; J. B. Banister, Jesus; E. Beaton, Caius; H. Beckton, M.A., Clare; A. E. Bellars, Magdalene; T. R. H. Blake, Pembroke; C. W. Bowle, Trinity; W. T. Briscoe, H. Selwyn; G. G. Butler, Emmanuel; A. F. Comyn, Pembroke; A. I. Cooke and H. B. Corry, Caius; D. V. Cow, Trinity; E. A. Crossley, Clare; R. Davies-Colley, Emmanuel; E. F. de Clermont, King's; A. N. Dickson, Downing; J. N. F. Fergusson, St. John's; A. C. D. Firth, Trinity; R. L. Gamlen, Caius; L. H. Goh, Emmanuel; G. W. Goodhart, Trinity; H. P. B. Gough, Sidney Sussex; W. B. Gourlay, Trinity; W. B. Grandage, Clare; H. T. Gray, Trinity; G. F. Greenwood, Sidney Sussex; J. M. P. Grell, H. Selwyn; H. S. Hall, Pembroke; Eric F. Harrison, Trinity; G. S. Haynes, King's; A. W. Hayward, St. John's; R. A. P. Hill, Caius; R. B. Hoisington, Christ's; C. W. Hutt, Trinity; R. S. Jenkins, St. John's; T. A. Jones, Caius; W. D. Keyworth, H. Selwyn; B. T. Lang, Trinity; H. M. J. F. de P. P. Leite, Caius; C. Lillingston, Pembroke; J. W. Linnell, St. John's; F. P. Luard, Downing; S. G. MacDonald, St. John's; J. McIntyre, King's; A. W. Moore, Emmanuel; A. R. Moore, B.A., and H. F. G. Noyes, Caius; G. G. Packe, Trinity; F. W. M. Palmer, B.A., Jesus; W. O. Pitt, Emmanuel; H. W. Pocock, Caius; S. B. Priston, St. John's; E. S. Purkis, H. Selwyn; A. C. H. Rothera, Emmanuel; D. W. Roy, Sidney Sussex; F. S. Scruby, H. Selwyn; R. B. S. Sewell, Christ's; P. H. Smith, Pembroke; P. L. Stallard, C. Strickland, and A. C. H. Suhr, Caius; D. W. Tacey, B.A., Christ's; R. S. Taylor, Downing; H. A. R. E. Unwin, H. Selwyn; B. Wallis, Trinity; G. H. H. Waylen, King's; G. L. Webb, Caius; H. B. Weir, Trinity; W. P. Williams, Downing; W. de L. Winter and J. L. Wood, Trinity; L. Worrall, B.A., Christ's; and H. N. Wyman, Caius.

SECOND EXAMINATION.

Part I., Pharmaceutical Chemistry.—L. J. Austin, Sidney Sussex; A. L. Baly, Emmanuel; A. S. B. Bankart, Trinity; J. D. Barris, Caius; E. Bell, Clare; G. L. Cox, Christ's; L. G. Davies, Trinity

T. Drysdale, Jesus; N. C. Fletcher, B.A., Queens'; R. E. French, King's; F. M. Gardner-Medwin, B.A., Trinity; T. R. Glynn, Clare; R. E. G. Gray, Pembroke; S. A. Henry, Trinity; R. F. V. Hodge, Emmanuel; W. G. Howarth, King's; E. C. Hughes, Clare; C. L. Isaac, B.A., St. John's; C. King, Trinity; H. E. Kitchen, B.A., Sidney Sussex; R. Leslie, B.A., Pembroke; S. M. Mackenzie, Trinity; E. H. Mayhew, Emmanuel; J. B. Mennell, Pembroke; S. H. Nixon, Emmanuel; W. H. Rayner, Trinity; W. H. Robinson, Downing; F. F. Shout, Caius; G. C. E. Simpson, St. John's; P. S. Stephens, Trinity; W. H. E. Stewart, Caius; and F. P. Young, Christ's.

Part II. Human Anatomy and Physiology.—H. Ackroyd, B.A., Caius; A. E. Barclay, B.A., Christ's; H. N. Burroughes, B.A., Trinity; H. J. Cardew, B.A., Clare; R. A. Clapham, B.A., Emmanuel; J. G. Cooper, Trinity; J. S. Cooper, B.A., Jesus; W. B. Crowfoot, B.A., Emmanuel; C. W. Cunnington, B.A., Non-Collegiate; W. F. L. Day, B.A., and J. H. Donnell, B.A., Caius; T. R. Elliott, Trinity; R. B. Etherington Smith, B.A., Trinity; J. E. Frere, B.A., Pembroke; F. Gayner, B.A., King's; H. U. Gould, B.A., Trinity; G. W. Greene, B.A., Downing; C. F. Hardie, B.A., Queen's; P. Hardy, B.A., Trinity Hall; E. T. Harris, B.A., Christ's; N. G. Harry, B.A., Jesus; A. W. Harvey, B.A., St. John's; H. G. L. Haynes, Downing; W. H. Hills, B.A., Pembroke; B. Hudson, B.A., Clare; J. Lambert, Downing; P. W. Leathart, B.A., Clare; W. E. Lee, B.A., and R. C. Mott, B.A., Trinity; C. M. Murray, B.A., Pembroke; P. K. Muspratt, B.A., Christ's; G. B. Norman, St. John's; P. N. Panton, B.A., Trinity; O. V. Payne, St. John's; J. S. Pearson, B.A., Trinity; H. I. Pinches, B.A., Sidney Sussex; C. A. W. Pope, B.A., Trinity; G. R. Rickett, B.A., King's; R. H. Robbins, B.A., Trinity; J. N. Robins, B.A., and T. Sanders, B.A., Christ's; H. C. Sidgwick, B.A., and J. G. Slade, B.A., Clare; T. D. Smith, B.A., Jesus; L. E. Wigram, B.A., Trinity; and S. L. O. Young, B.A., Christ's.

VICTORIA UNIVERSITY.—The Council has decided on the award of the following degrees, which will be conferred by the Chancellor, Earl Spencer, K.G., on June 30th, at the Free Trade Hall, Manchester:—

Degree of Doctor of Science.—H. T. Ashton, W. H. Bentley, F. W. Gamble, and George Wilson, Owens.

Degree of Doctor of Medicine.—Hubert Armstrong, University, and Alfred Greenwood, J. A. MacLaren, W. A. Newall, and F. W. Stansfield, Owens.

FOREIGN UNIVERSITY INTELLIGENCE. — *Baltimore (Johns Hopkins University):* Dr. F. S. Cullen and Dr. W. W. Russell have been appointed Professors of Gynæcology.—*Berlin:* Dr. Albert Eulenburg has been promoted to an Extraordinary Professorship. He was formerly Professor of Pharmacology in the University of Greifswald.—*Bologna:* Dr. Serafino Patellani of Parma has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Chicago (Rush Medical College):* Dr. Henry Favill has been appointed Professor of Therapeutics.—*Genoa:* Dr. Angelo Becco of Rome has been recognised as *privat-docent* of Topographical Anatomy and Operative Medicine, and Dr. Rocco Iemma of Naples has been recognised as *privat-docent* of Pædiatry.—*Göttingen:* Dr. A. Cramer has been appointed to the chair of Psychiatry.—*Gratz:* Dr. Alois Birnbacher, Extraordinary Professor of Ophthalmology, has been promoted to an Ordinary Professorship.—*Halle:* Dr. Schick has been recognised as *privat-docent* of Ophthalmology.—*Heidelberg:* Dr. Göppert has been appointed Extraordinary Professor of Anatomy.—*Innsbruck:* A new chemical and pharmacological institute has just been erected.—Dr. Stephan Bernheimer of Vienna has been appointed Professor of Ophthalmology.—*Kiel:* Dr. Paul Sick has been recognised as *privat-docent* of Surgery.—*Königsberg:* Dr. Oscar Samter, *privat-docent* of Surgery, has been promoted to a professorship.—*Naples:* Dr. Tommaso Guido and Dr. Ettore Somma have been recognised as *privat-docenten* of Pædiatry, and Dr. Giovanni Graziani has been recognised as *privat-docent* of Medical Pathology.—*Padua:* Dr. Arslan of Turin has been recognised as *privat-docent* of Otolaryngology.—*Palermo:* Dr. Fortunato of Genoa has been recognised as *privat-docent* of Ophthalmology.—*Prague (Bohemian University):* Dr. Kunta has been promoted to an Extraordinary Professorship of Pathological Anatomy; Dr. Carl Kuffner has been appointed Professor of Psychiatry and Neuro-pathology; and Dr. Jaroslav Bukovsky has been recognised as *privat-docent* of Dermatology and Syphilis.—*Rostock:* Dr. Ehrlich has been recognised as *privat-docent* of Surgery and Dr. Scheven as *privat-docent* of Medicine.—*St. Petersburg (Military Medical Academy):* Dr. Gerver has been recognised as *privat-docent* of Neurology and Psychiatry.—*Strasburg:* Dr. Hans Landolt has been recognised as *privat-docent* of Ophthalmology and Dr. Albrecht Funka as *privat-docent* of Midwifery and Gynæcology.—*Vienna:* Dr. A. Elzholz has has been recognised as *privat-docent* of Psychiatry and Neurology.—*Würzburg:* Professor Hess of Marburg has been appointed to the chair of Ophthalmology vacated by the migration of Professor von Michel to Berlin.—*Zürich:* Dr. Paul Ernst of Heidelberg has been appointed Professor of Pathology and General Anatomy.

THE WELLCOME CHEMICAL RESEARCH LABORATORIES.—These recently completed laboratories were opened for inspection on June 18th. The building, which is situated at No. 6, King-street, Snow-hill, is in the Venetian style of architecture, and consists of four storeys. On the first, second, and third floors are located the different laboratories completely equipped for their purposes while the director of the laboratories, has his library and office on the ground floor. The proprietors would appear to have spared no trouble or expense in making the laboratories complete.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Karl Lange, Professor of Pathological Anatomy in the University of Copenhagen, in his sixty-seventh year. He was editor of the Danish medical journal, *Hospitals Tidende.*—Dr. Friedrich Brosin, a well-known Dresden gynæcologist, whilst touring in Saxon Switzerland. He was only 42 years of age.—Dr. Carter Gray, formerly Professor of Neurology in the Long Island College Hospital, Brooklyn.—Dr. Frothingham, late Professor of Ophthalmology in the Ann Arbor University of Michigan.—Dr. Wilhelm Kühne, the well-known Heidelberg Professor of Physiology.

MAIDENHEAD COTTAGE HOSPITAL.—At a special general meeting of the supporters of this hospital, held at the Town Hall on June 15th, a question of revising the rule as to payment by, or on behalf of, patients was considered in consequence of the generous gift of Mr. W. W. Astor of £10,000 to the institution. After some discussion it was decided that "patients may be admitted to the hospital free of charge, but none shall be admitted without security from some substantial person for payment of the expenses of burial in case of death or of removal, except in cases of sudden emergency. In the case of domestic servants in active service or persons in good circumstances the house secretary may make such charge as he deem proper, not exceeding 10*s.* 6*d.* weekly."

THE SCATTERGOOD TESTIMONIAL AND YORKSHIRE COLLEGE, LEEDS.—In May last, at a meeting held in the Philosophical Hall, it was decided to raise funds for a testimonial to Mr. Thomas Scattergood, M.R.C.S. Eng., in recognition of his long and appreciated services to the medical department of Yorkshire College and that it should take the form of a portrait to hang in the medical school. Sir George Reid, president of the Royal Scottish Academy, was the artist selected to paint the portrait, and although it was not finished before Mr. Scattergood's death the likeness is a good one. On June 11th Mr. A. G. Luton, chairman of the council of the college, made the presentation, on behalf of the subscribers, to the family, and Mr. A. K. Scattergood on their behalf afterwards handed the portrait back, to be hung in the medical school. Miss Scattergood was at the same time the recipient of an inlaid wood and silver tea tray as a souvenir, and each member of the family received a bound copy of the resolutions passed by the council and the medical board which testified the esteem in which the late Mr. Scattergood was held by his colleagues. The cash surplus which remains is to be appropriated to founding a prize in the medical school to be called the "Scattergood Prize."

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Midwives Bill.

THE report stage of the Midwives Bill is down for Wednesday, June 27th—the last Wednesday reserved for the consideration of Bills introduced by private Members. It is doubtful, however, whether it will be reached on that occasion, as there are other Bills in front of it. So far the Government has made no promise of facilities for the measure and, indeed, it is understood that objection is taken to certain of its provisions by the Government.

Registered Companies and Medical Practice.

There is a Bill before Parliament this session, introduced into the House of Commons by the President of the Board of Trade, for the

amendment of the law with regard to registered companies. It deals with such large general questions as the issue of prospectuses and the liabilities of promoters and directors, but in addition it contains a clause of special interest to medical men—a clause declaring that it shall not be lawful for companies to carry on the practice of medicine. It is to be feared, however, that the Bill will not become law during the present session. It has not yet been read a second time and so far the Government has been unable to name a probable date for the second reading.

HOUSE OF COMMONS.

THURSDAY, JUNE 14TH.

The Teaching of Infants.

Sir JOHN GORST, Vice-President of the Board of Education, reviewed at this sitting of the House the elementary education system of the country. He dealt at length with the abandonment of individual examination and the introduction of the block system, with the increased duties and powers now devolving upon inspectors in consequence of this change, with the need for more and better facilities for the training of teachers, and with the teaching of infants. In this last connexion, he said, we begin our attempts at education a great deal too soon, just as we leave off a great deal too soon. The child was cooped up in school as soon as he was three years old when he had much better be playing about in the lanes or fields. He had a quantity of information crammed into him which his little brain was quite incapable of assimilating and he was taken out of school at 11 or 12 years to labour for the rest of his life. Infants' schools were, in the phrase of one of the inspectors, storage places for babies. They were instituted not so much for the benefit of the children as to enable the mothers to have leisure to go to work. If the State chose to establish nurseries of this kind they should make them nurseries, and they should assimilate the teachers, of the youngest children at all events, to nurses. He should say that the age of six years was quite early enough to attempt to exercise the human brain and that between six and eight years the kindergarten system of teaching was the only one which was really suitable. On the subject of the feeding of children Sir John Gorst said: It is the general opinion that this is a matter which should be left altogether to private charity, and that the school authorities should not deal with it. I got into a great scrape last year by enumerating some opinions that it was the duty of the school authorities to see that the children were fed before they were taught. I am quite willing to agree that children should be fed by charitable agencies if they can be, but it seems to me that if you compel children to go to school and compel them to receive instruction, then you have the obligation thrown upon you to make some provision by which those children shall be sent to school in a fit state. This is not a private duty thrown on the parent, it is a public duty which the State has a right to insist on being fulfilled; and, if proper laws are made and a proper administration of the law is carried into effect, I believe the cases in which children would be sent to school unfed and unfitted to receive instruction would be extremely rare. One or two examples made of negligent parents would prevent the recurrence of the offence. It is not the poor parent—it is very seldom extreme poverty which causes the trouble as to underfed children. It is generally idleness, or drunkenness, or carelessness on the part of the parents which is at the bottom of the mischief, or it is greediness for the small earnings of the children. It is not, I say, the poor, but the negligent, parent who is the real offender. I believe that posterity will view with surprise and wonder the state of affairs in this matter, and will marvel how this generation was so stupid as to tolerate it.

FRIDAY, JUNE 15TH.

Experiments on Living Animals.

Mr. JESSE COLLINGS, Under Secretary of State for Home Affairs, moved for a return giving certain information with reference to experiments made on living animals during 1899 under Home Office licences.—Mr. JOHN ELLIS complained of the motion not having been made earlier in the session and the return prepared and presented at a period of the session which left Members interested in this subject opportunity for discussion.—Mr. COLLINGS said that although the formal motion was on this occasion somewhat late the return itself was practically ready and would be presented in the course of a week or ten days. In another session, if he had the opportunity, he would endeavour to have the return prepared earlier.—The motion was then agreed to.

Famine and Cholera in India.

Lord GEORGE HAMILTON, replying to questions on this subject, said: The total number of persons on relief works in India, according to the latest accounts, is 5,802,000. The famine was caused by the failure of last autumn's rains and has therefore lasted about seven months. It is absolutely impossible at present to form even an approximate estimate of the number of deaths which it has caused directly or indirectly. In some parts of India, where famine has been aggravated by cholera and small-pox, the mortality, I fear, has been very heavy; in other large districts where the famine is equally severe, but has not been associated with wholesale epidemic disease, the efforts of the Government of India and its organisation of relief have been so successful that the death-rate is hardly above normal. The total number of reported plague deaths from 1896, when the epidemic began, down to last April was 358,685—that is to say, about one death per annum to every 3000 living inhabitants of India. At the present moment the plague mortality in Bombay is lower than at any period in the three preceding years.—Mr. WILLIAM REDMOND asked the noble lord if his attention had been called to the report of Dr. Kloptsch, administrator of the fund raised in New York for the relief of distress in India, and whether he had any information to the effect, as stated in the report, that vultures, dogs, and jackals had been found devouring human bodies left unburied; and whether, in view of the suffering caused by famine and plague throughout India at present, the Government would recommend at once the appointment of a Royal Commission to inquire into the best and speediest method of dealing with the state of affairs now existing in Her Majesty's Indian Empire.—Lord GEORGE HAMILTON: I have seen the telegram of Dr. Kloptsch and have read similar statements in one or two of the numerous reports that have reached me. These statements only apply to the districts, limited in number, I am glad to say, where cholera and small-pox have attacked the famine camps, thus forming a combination which for the moment baffles any administrative palliation. A Commission of great weight and authority was appointed in 1897 to report on the best method of dealing with famine in India, and its suggestions, which were published in 1898 after a most elaborate and searching inquiry, have been of great value; another similar Commission was appointed in 1898 to deal with the plague, and has produced a very important and exhaustive report, part of which only has yet been published. I do not therefore propose at present to advise the appointment of a Royal Commission, though it may hereafter be advisable, when the present epidemics are over, to utilise the experience gained by making it the subject of further reports.—Mr. WILLIAM REDMOND suggested that the Government should at once raise money to relieve the distress.—Lord GEORGE HAMILTON: It is not a question of money. The only method by which you can deal with the enormous number of people who are suffering from hunger over great areas is to aggregate them in camps on healthy sites. Unfortunately, in the west of India there has been no rain for the last seven months and the difficulty is not so much the scarcity of food as the purity of the water. If cholera attacks in its worst form one of the camps it so terrifies the people that they fly in all directions, carrying with them the germs of disease and dying by the roadsides and in the ditches. And the difficulty does not end there even, because not only does the panic affect the people who are congregated in the camps, but it affects the hospital assistants, camp followers, and camp scavengers. I believe that on more than one occasion the European officer after a panic has found himself with but few assistants in the presence of the dead and dying, all the rest having fled. It is due to such a state of things, and not to a lack of money, that the difficulty arises.

The Deaths from Heat at Aldershot.

Mr. GEORGE WYNDHAM made a long statement with reference to this subject. The essential parts were as follows, viz.:—On Monday, June 11th, a field day was ordered at Aldershot and a total of 18,002 men came on parade. The general order in force on all such occasions is that the men are to get their breakfast before starting and that they are to be provided with light refreshments at some time during the day. The method of carrying out that order is left to the regimental authorities. The breakfast consists of bread and tea and there is no reason to believe that any regiment failed to get breakfast before starting. The light refreshment may consist of sandwiches, but the most popular thing with the men is bread-and-cheese. The men dine on their return to camp and very much prefer these arrangements to carrying an emergency ration which would not be palatable unless a prolonged halt were made for cooking it. The light refreshment of sandwiches or bread-and-cheese may either be served out to the men before they start for them to carry in their haversacks or it may be arranged that a canteen cart shall meet the regiment at some specified point. That is a matter entirely for regimental arrangement and one upon which it would be injudicious to lay down uniform regulations. On Monday morning when the troops started there was, the general commanding states, no exceptional heat; on the contrary, he expected rain. But about 10 o'clock great heat began to be felt and as it continued the "Halt" was sounded at 10.30 and the "Cease fire" at 11.15. It was then directed that the men should be marched back as easily as possible and with such periods of rest as their officers commanding might think desirable. During the march back the severe heat was very much felt; a large number of men fell out; 28 men were received in hospital suffering severely from the effects of the sun, of whom four have died; and 29 men suffered slightly. With the exception of the four men the other patients have made rapid recoveries. The whole distance covered by the troops was at the outside about 14 miles and in many cases less. On the question of head-dress, in most regiments the head-dress worn was the field cap. This cap was designed to afford greater protection than the glengarry, which it has superseded in the great majority of our regiments. The problem of designing an ideal field cap is not an easy one. The cap must be sufficiently light and compact to be carried conveniently in the breast or haversack of the soldier when wearing his helmet; and it is also impossible to ignore altogether the soldier's view of what constitutes a smart head-dress. Before this melancholy occurrence the adjutant-general was at work on a sunshade to be attached to the field cap. But the best course is undoubtedly that all men in possession of helmets should wear them in summer-time, whatever the forecast of the weather, and that men, principally in the Royal Reserves, who are still, owing to the exigencies of the war, unprovided with helmets, should not be allowed to undergo severe exertion at a distance from their barracks. The Commander-in-Chief has notified to the general officer commanding, Aldershot, his regret that this course was not adopted, and has directed that it shall be followed in future. Amid much that is regrettable I am glad to know that 14 medical men and an ambulance were in attendance to mitigate the sufferings to which the troops were exposed by a sudden and unforeseen rise of temperature.—Mr. BARTLEY asked whether the head-dress worn on this occasion was not the same as that worn during the manœuvres in 1898, when there were 61 cases of sunstroke.—Mr. WYNDHAM said that in the majority of cases the field cap was in use in 1898.—Mr. BARTLEY inquired whether some promise was not held out in 1898 that there would be a reform in the head-dress.—Mr. WYNDHAM replied that there had been some discussion and that attempts had been made to improve the head-dress. He still held that the better solution was to wear the proper head-dress (the helmet) and not attempt to use the field cap for purposes for which it was not intended.—Sir J. KENNAWAY asked whether he understood aright that the helmet was in future to be universally worn during manœuvres.—Mr. WYNDHAM replied that the Commander-in-Chief had issued instructions that in summer, whatever the weather, the helmet was to be worn, and that troops unprovided with helmets were not to take part in exhausting operations.

MONDAY, JUNE 18TH.

The Deaths from Heat at Aldershot.

On this subject Mr. WYNDHAM read the following report from the general officer commanding at Aldershot—viz., "With reference to your telegram of June 16th, 1900, I have the honour to report as follows: (1) Reports received from commanding officers state that all men had breakfasts before starting for the field day on the 11th inst.;

(2) light refreshments were actually supplied and carried by every unit some in the haversack, but in the majority of cases in transport carts; (3) the only units that did not receive their refreshments on the 'cease fire' sounding were the 5th Worcester Regiment and the 4th Royal Inniskilling Fusiliers. In the case of the 5th Worcestershire Regiment the officer commanding reports that the cart conveying the refreshments went astray during the operations. As regards the 4th Royal Inniskilling Fusiliers, the commanding officer reports that a contractor had undertaken to supply the battalion with bread and cheese. At the hour of the departure of the battalion he failed to appear. A mule cart was then loaded with the refreshments, but, owing to the driver not being acquainted with the locality in which the operations took place, the cart unfortunately did not turn up."

TUESDAY, JUNE 19TH.

Disease and Famine in India.

Mr. MACLEAN asked the Secretary of State for India whether medical authorities in India had condemned the practice of collecting together people seeking famine relief in large camps which were specially liable to attacks of epidemic disease, instead of distributing them near their own homes; whether Mr. Monteath, chief secretary to Government, had reported that it was undoubtedly true that there was not sufficient establishment in India to deal adequately with the demands for relief, and that it was not supposed that the rules and orders of Government were perfectly carried out; and, whether the India Office still considered that the resources of India were sufficient to deal with the famine.—Lord GEORGE HAMILTON replied: I am not aware that the opinion of medical authorities in India is against large relief works. It is, of course obvious that there are some disadvantages in collecting the sufferers from famine in large camps, but the system is on the whole working well and appears to be the only one under which relief on a large scale can be effectively supervised. I have no knowledge of any such report as that which is attributed in the question to a secretary of the Bombay Government. I have reason to believe that although there must be much misery and distress connected with so unparalleled a drought the resources of the India Government as matters now stand are equal to the task undertaken by that Government in respect of the famine.

THE PROPOSED EXEMPTION OF HOSPITALS FROM LOCAL RATES.

The Select Committee of the House of Commons appointed to inquire into the proposed exemption of hospitals from local rates held its first meeting for the examination of witnesses on June 19th. Mr. T. W. Russell, Parliamentary Secretary to the Local Government Board, presided.

Mr. A. D. ADRIAN, legal adviser to the Local Government Board, was the first witness examined. He furnished the Committee with a long statement of the history of the question and the development of the law by means of various judicial decisions. The earliest record he produced was a report of a case decided in the first year of the reign of Queen Anne in which hospitals were held to be liable for rates like other classes of property. In 1760 what was known as the St. Luke's Hospital case was decided by the King's Bench on appeal from Quarter Sessions, the effect of it being that the trustees of the hospital could not be rated as occupiers. On this occasion, however, Lord Mansfield said the judgment carried no general consequences, and each case must be decided upon its merits. Mr. Adrian cited the facts and judgments in relation to the St. Bartholomew's Hospital case nine years later, the York Lunatic Asylum case in 1832, the Bethlehem Hospital case in 1847, and other cases in which hospitals had derived advantage by exemption from rates. He explained, however, that the principles upon which those decisions were founded had no general application. From 1847 onwards there had been frequent decisions in a divergent direction by which property used for charitable and public purposes was held to be liable to rating. Notable among these decisions were that given in the House of Lords in 1865 in the Mersey Docks case, the Ilkley Hospital case in the same year, and the decision in 1875 which declared the Governors of St. Thomas's Hospital liable for rates. The decision against the London County Council in respect of the Erith outfall works in 1895 further defined the interpretation of beneficial occupation, and the general deduction from the judgments given was that local authorities were bound to assess these institutions in substantial amount. The exemptions from rating included Crown property, parks, some barracks, post-offices, county buildings, churches and chapels, buildings of literary, scientific, and artistic societies, reformatory schools, voluntary schools, volunteer stores, lighthouses, &c., and Sunday schools and ragged schools, at the option of the rating authority. The London Hospital was exempt from rates by virtue of a local Act, the Whitechapel Act.

Before the committee adjourned they took some evidence from Mr. BURT, chairman of the Central Hospital Board, who supported the claim of the hospitals for exemption.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.*

ABBOTT, T. E., L.S.A. Lond., has been appointed Vaccinator for the Registration District of Lyell, Tasmania.

ANDERSON, G. M., M.B., Ch.M. Aberd., has been appointed Vaccinator for the Health Districts of Franklin, South Franklin, and Port Cygnet, Tasmania.

ANDERSON, J. F., L.R.C.P., L.R.C.S. Edin., has been appointed Vaccinator for the Municipal District of Longford, Tasmania.

BLOMFIELD, A. B., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the North Peckham Sanitary District of the Parish of St. Giles, Camberwell, vice S. C. Phillips, deceased.

BUTCHART, J. E., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Vaccinator for the Municipal District of Oatlands, Tasmania.

CLARKE, A. H., L.R.C.P. Lond., M.R.C.S., has been appointed Vaccinator for the Registration District of Hobart, and the towns of Bellerive and Beltana, Tasmania.

CLARKE, H. W., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Capel Sanitary District of the Dorking Union, vice J. L. Jardine, resigned.

COLLIER, JAMES, M.D., B.C. Lond., M.R.C.P., has been appointed Pathologist to the National Hospital for the Paralysed and Epileptic, Queen-square, London, vice F. E. Batten.

COLTS, P. C., L.R.C.P. Lond., M.R.C.S., has been appointed Senior House Physician to King's College Hospital, Lincoln's Inn-fields, London.

CROWTHER, E. L., M.D. Aberd., M.R.C.S., has been appointed Vaccinator for the Registration District of Hobart, Tasmania.

DAMMAN, G. W., M.B., Ch.B. Melb., has been appointed Vaccinator for the Municipal District of Deloraine, Tasmania.

DAVIS, R. H. D., M.R.C.S. Irel., has been appointed Vaccinator for the Registration District of Sheffield, Tasmania.

DEPREE, SIDNEY S., M.B., Ch.B., has been appointed Senior House Surgeon to the Bootle Borough Hospital, Liverpool.

DE RENZI, HENRY CARTER CASHIOT, M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Surgeon to the Wellington Hospital, New Zealand.

EDWARDS, C. W., F.R.C.S. Edin., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Temple Coombe Sanitary District of the Wincanton Union, vice E. O. Scallon, resigned.

EVERINGTON, H. D., M.B. Lond., L.R.C.P., M.R.C.S., has been appointed Resident Medical Officer to the Royal Hospital for Children and Women, Waterloo Bridge-road, London, S.E.

FAULKNER, W. C., M.B., Ch.M. Edin., has been appointed Vaccinator for the Registration District of Waratah, Tasmania.

FENN, C. E., M.B. Durh., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon at King's College Hospital, Lincoln's Inn-fields, London.

GIBLIN, W. W., L.R.C.P. Lond., M.R.C.S., has been appointed Vaccinator for the Registration District of Hobart, Tasmania.

GOULDEN, H. E., L.R.C.P. Lond., M.R.C.S., D.P.H. Cantab., has been appointed Medical Officer for the Fifth Sanitary District of the Honiton Union, vice H. Steven, resigned.

GRAHAM, A. W., M.B. Lond., M.R.C.S., has been appointed Vaccinator for the Health Districts of Beaconsfield and Dalrymple, Tasmania.

GUTTERIDGE, M. W., M.B., Ch.M. Edin., M.R.C.S., has been appointed Vaccinator for the City of Launceston, Tasmania.

HAINES, H. G., F.R.C.S. Edin., has been appointed Vaccinator for the Municipal District of Longford, Tasmania.

HAINES, WHEELER, B.Sc. Lond., M.R.C.S., L.R.C.P. Lond., L.S.A., has been appointed Senior Assistant Medical Officer to the North Riding Asylum, Clifton, York.

HAMILTON, A. J., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Vaccinator for the town of Queenstown, Tasmania.

HARDY, J. A., L.R.C.P. Edin., M.R.C.S., has been appointed Vaccinator for the Registration District of Hobart, Tasmania.

HERN, WILLIAM, M.R.C.S., L.D.S., has been appointed Dental Surgeon to the Middlesex Hospital, vice Storer Bennett.

HOLMES, L. S., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Vaccinator for the Registration District of Launceston, Tasmania.

HOSKINS, T., L.R.C.P. Edin., L.R.C.S. Irel., has been appointed Vaccinator for the Municipal District of Fingal, Tasmania.

HUDSON, J. S., M.R.C.S., L.R.C.P., has been appointed Pathologist to the Infirmary for Consumption, Margaret-street, Cavendish-square, London, W., and Richmond Home, Worthing.

HUNTER, DAVID, M.A., M.B. B.C. Cantab., L.S.A. Lond., has been appointed Medical Superintendent of the New West Ham Borough Asylum at Chadwell Heath.

IRELAND, E. W. J., M.B., Ch.M. Edin., has been appointed Vaccinator for the City of Hobart, Tasmania.

JACKSON, A. G., M.D. Brux., L.R.C.P., L.R.C.S. Edin., has been appointed Vaccinator for the Municipal District of Russell, Tasmania.

JEFFRISS, F. B., L.R.C.P. Lond., M.R.C.S., has been appointed Assistant House Physician to King's College Hospital, Lincoln's Inn-fields, London.

JOYCE, C., M.B. Melb., has been appointed Vaccinator for the Municipal Districts of George Town and Westbury, Tasmania.

KENNEDY, JOHN, M.D. Irel., has been appointed Vaccinator for the Registration District of Zeehan, Tasmania.

LUKE, THOMAS D., M.B., B.Ch., has been appointed Anæsthetist to the Edinburgh Deaconess Hospital.

MACKENZIE, J. H., L.R.C.S. Edin., has been appointed Vaccinator for the Registration District of Strahan, Tasmania.

MASON, JOHN B., L.R.C.P. Edin., M.R.C.S., has been appointed Vaccinator for the Municipal District of Longford, Tasmania.

MUIR, JAMES M. M., M.B., Ch.M. Glasg., has been appointed Vaccinator for the Registration District of Wynyard, Tasmania.

NOONAN, PATRICK, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Vaccinator for the Municipal Districts of Hamilton and Bothwell, Tasmania.

OWENS, EDWARD M., L.R.C.P. Edin., M.R.C.S., has been appointed Vaccinator for the Registration District of Emu Bay, Tasmania.

PARDEY, J. McI., M.B., Ch.B. Irel., has been appointed Vaccinator for the Registration District of Launceston, Tasmania.

PARSONS, A. R. C., L.R.C.P. Lond., M.R.C.S., has been appointed Junior House Physician to King's College Hospital, Lincoln's Inn-fields, London.

PEDLEY, G. ASTON, L.S.A., L.R.C.P. Lond., M.R.C.S., L.D.S. Eng., has been appointed Dental Surgeon to the Tonbridge Grammar School.

PENNY, HENRY J., L.K.Q.C.P. Irel., L.R.C.S., has been appointed Vaccinator for the Municipal Districts of New Norfolk, Tasmania.

ROBERTS, C. HUBERT, M.D. Lond., F.R.C.S. Eng., M.R.C.P., has been appointed Physician to In-patients at the Samaritan Hospital for Women, London, N.W.

ROBERTS, G. A., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon at King's College Hospital, Lincoln's Inn-fields, London.

ROBINSON, DOUGLAS A., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Vaccinator for the Municipal District of Deloraine, Tasmania.

ROCKETT, P. J. A., M.B., Ch.B. Melb., has been appointed Vaccinator for the Health Districts of Gormanston and Mount Lyell, Tasmania.

SAUNDERS, E. M., L.R.C.P. Lond., M.R.C.S., has been appointed Assistant House Accoucheur to King's College Hospital, Lincoln's Inn-fields, London.

SCOTT, R. G., M.B., Ch.M. Edin., has been appointed Vaccinator for the Registration District of Hobart, Tasmania.

SHARP, H. C., M.B., B.C. Camb., has been appointed Medical Officer of Health for the City of Truro, vice E. Sharp, resigned.

SMITH, R., F.R.C.S. Edin., has been appointed Vaccinator for the Registration District of Tasman's Peninsula, Tasmania.

SPARKES, W. M., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon at King's College Hospital, Lincoln's Inn-fields, London.

SPROTT, GREGORY, M.B., Ch.M. Glasg., has been appointed Vaccinator for the Registration District of Hobart, Tasmania.

TOFFT, W. H., M.B., Ch.M. Edin., has been appointed Vaccinator for the Municipal Districts of Campbell Town and Ross, Tasmania.

TAR-TYMAN, T. M., L.S.A., has been appointed House Accoucheur to King's College Hospital, Lincoln's Inn-fields, London.

UNSWORTH, J. W., M.B., Ch.B. Vict., has been appointed Medical Officer of Health for the Blackrod Urban Sanitary District.

WALCH, C. N. C., M.B. Durh., L.R.C.P. Lond., M.R.C.S., has been appointed Vaccinator for the Registration District of Hobart, Tasmania.

WATSON, G. G., M.B., Ch.M. Edin., has been appointed Vaccinator for the Registration District of Emu Bay, Tasmania.

WILSON, J. M., M.D. Glasg., D.P.H. Camb., has been appointed Medical Officer of Health for the Wheatley Urban Sanitary District.

WOLFHAGEN, JOHN E., M.B., Ch.M. Edin., has been appointed Vaccinator for the Registration District of Hobart, Tasmania.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRIDGWATER INFIRMARY.—House Surgeon. Salary £80 per annum with board and residence.

BRISTOL EYE HOSPITAL.—Locum Tenens for the House Surgeon for two months. Salary 2½ guineas a week, without residence.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—House Surgeon. Salary £120 per annum, with rooms and attendance (not board), or £80 with board.

BRIXTON DISPENSARY, Water-lane, S.W.—Locum Tenens for three weeks. Terms £3 3s. per week.

CARDIFF AND COUNTY PUBLIC HEALTH LABORATORY.—Assistant to the Bacteriologist. Salary £120 a year. Applications to the Clerk of the Joint Committee, Glamorgan County Offices, Cardiff.

CARDIFF INFIRMARY.—Assistant House Physician for six months. Salary at the rate of £50 per annum, with board, washing, and apartments.

CARLISLE DISPENSARY.—House Surgeon. Salary £150 per annum, with apartments (not board).

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Resident Medical Officer for twelve months. Salary £60 per annum.

CITY OF LIVERPOOL INFECTIOUS DISEASES HOSPITALS.—Assistant Resident Medical Officer for these hospitals, unmarried. Salary £100 per annum, with board, washing, and lodging at the hospital. Applications to be addressed to the Chairman of the Port Sanitary and Hospitals Committee, under cover to the Town Clerk, Municipal Offices, Liverpool.

CITY ORTHOPÆDIC HOSPITAL, Hatton-garden, London.—Physician.

CORNWALL COUNTY ASYLUM, Bodmin.—Junior Assistant Medical Officer, unmarried. Salary £100, rising to £120 per annum, with board, furnished apartments, &c.

DENBIGHSHIRE INFIRMARY, Denbigh.—House Surgeon for 12 months. Salary £80, with board, residence, and washing.

DEVONSHIRE HOSPITAL, Buxton, Derbyshire.—House Surgeon and Assistant House Surgeon for twelve months. Salary of House Surgeon £100 per annum. Assistant House Surgeon £50, with furnished apartments, board, and washing in both cases.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY, Dumfries.—House Surgeon. Salary £50 per annum, with board and washing.

EAST SUFFOLK AND IPSWICH HOSPITAL, Thorofare, Ipswich.—Second House Surgeon for one year, unmarried. Salary £60, with board, lodging, and washing.

ESSEX AND COLCHESTER HOSPITAL, Colchester.—Resident House Surgeon. Salary £100 per annum, with board and washing.

HAMPSTEAD HOSPITAL, Parliament-hill, N.W.—Resident Medical Officer for six months. Salary at the rate of £120 per annum, with rooms, coals, and gas.

HEIGHAM HALL ASYLUM, Norwich.—Assistant Medical Officer.

HOLLOWAY SANATORIUM HOSPITAL FOR THE INSANE, Virginia Water, Surrey.—Junior Assistant Medical Officer. Salary £100 per annum, rising £20 annually to £200, with board, lodging, washing, and attendance.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months, with an honorarium of £25. Also Surgeon.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London.—Two House Surgeons to Out-patients, non-resident, for six months. Salary 25 guineas each and lunch at the hospital.

HUDDERSFIELD INFIRMARY.—Junior House Surgeon. Salary £60 per annum, with board, residence, and washing.

INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY, South Shields.—Junior House Surgeon. Salary £75 per annum, with residence, board, and washing.

LIVERPOOL STANLEY HOSPITAL.—Honorary Physician.

METROPOLITAN ASYLUMS BOARD.—A Fourth Assistant Medical Officer at the Asylum, at Darenth, near Dartford, Kent, unmarried. Salary £150 per annum, rising to £170, with board, lodging, attendance, and washing, subject to the provisions of the Poor Law Officers' Superannuation Act, 1896.

MIDDLESEX HOSPITAL, W.—Assistant Dental Surgeon.

MILLER HOSPITAL AND ROYAL KENT DISPENSARY, Greenwich-road, S.E.—Junior Medical Officer for six months. Salary at the rate of £60 per annum, with board, attendance, and washing.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Albany Memorial), Queen-square, Bloomsbury, London.—Registrar. Annual honorarium 50 guineas.

NORTH RIDING ASYLUM, Clifton, York.—Junior Assistant Medical Officer, unmarried. Salary £125, rising £10 annually to £175, with board, furnished apartments, washing, and attendance.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £140 per annum, all found except board.

OLDHAM INFIRMARY.—A Senior and a Junior House Surgeon for one year. Salary £85 and £70 per annum respectively, with board, residence, and washing. Also Locum Tenens, for at least one month. Terms 4 guineas per week, with board and residence.

PARISH OF BIRMINGHAM WORKHOUSE INFIRMARY.—Assistant Resident Medical Officer for the Workhouse Infirmary, for one year. Salary £100 per annum, with furnished apartments, rations (no alcoholic liquors), coals, gas, laundry, and attendance. Applications to the Clerk to the Guardians, Parish Offices, Edmund-street, Birmingham.

PLYMOUTH BOROUGH ASYLUM.—Assistant Medical Officer, unmarried. Salary £125 per annum, rising by five equal annual additions to £150 per annum, with furnished apartments in the Asylum, with board and washing.

PONTEFRACT GENERAL DISPENSARY AND INFIRMARY.—Resident Medical Officer, unmarried. Salary £150 per annum, with furnished rooms, fire, lights, and attendance.

ROTHERHAM HOSPITAL AND DISPENSARY.—Assistant House Surgeon. Salary £80 a year, with board, lodging, and washing.

ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road, Brighton.—House Surgeon for twelve months. Salary £80, and board, lodging, and washing. No stimulants.

ROYAL HALIFAX INFIRMARY.—Third House Surgeon, unmarried. Salary £50 per annum, with residence, board, and washing.

ROYAL DEVON AND EXETER HOSPITAL, Exeter.—Junior Assistant House Surgeon for six months. Salary at the rate of £80 per annum, with board, lodging, and washing.

ST. MARY'S CHILDREN'S HOSPITAL, Plaistow, E.—Assistant Resident Medical Officer for six months. Salary at the rate of £80 per annum, with board, residence, laundry, &c.

ST. MUNGO'S COLLEGE, GLASGOW, FACULTY OF MEDICINE.—Bellahouston Chair of Anatomy. Emoluments £300 per annum.

SALISBURY GENERAL INFIRMARY.—Assistant House Surgeon, unmarried. Salary £50 per annum, with apartments, board, and washing.

SALOP INFIRMARY, Shrewsbury.—Assistant House Surgeon for six months. Salary at the rate of £60 per annum, with board and washing.

SOUTHPORT INFIRMARY.—Resident Junior House and Visiting Surgeon for six months. Honorarium at the rate of £50 per annum, with residence, board, and washing provided.

STAMFORD-HILL AND STOKE NEWINGTON DISPENSARY, 189, High-street, Stoke Newington.—Assistant Resident Medical Officer. Salary £100 per annum, with board.

STAMFORD, RUTLAND, AND GENERAL INFIRMARY, Stamford.—House Surgeon for two years, unmarried. Salary £100 per annum, with board, lodging, and washing.

SUSSEX COUNTY HOSPITAL, Brighton.—House Surgeon, unmarried. Salary £140 per annum, with board and residence in the hospital and washing.

SWANSEA GENERAL AND EYE HOSPITAL.—House Physician for twelve months. Salary £50 per annum, with board, apartments, washing, and attendance.

TEIGNMOUTH HOSPITAL, South Devon.—House Surgeon.

TIVERTON INFIRMARY AND DISPENSARY.—House Surgeon, unmarried. Salary £80, with board, lodging, and washing.

UNIVERSITY OF ABERDEEN.—Examiners.

VICTORIA HOSPITAL FOR CHILDREN, Queen's-road, Chelsea, S.W.—Resident Medical Officer for six months. Honorarium £25, with board and lodging in the Hospital.

WEST DERBY UNION.—Resident Assistant Medical Officer (unmarried) at the Mill-road Infirmary, Everton, Liverpool, for one year. Salary £100 per annum, with rations. Subject to statutory deduction. Applications to the Clerk to the Guardians, Broughamterrace, Liverpool.

WESTERN GENERAL DISPENSARY, Marylebone-road, London.—Honorary Physician. Also House Surgeon, resident and unmarried. Salary £75 per annum, with board and residence and 10s. a month for washing.

WEST HAM HOSPITAL, Stratford, E.—Junior House Surgeon for one year. Salary £75 per annum, with board, residence, &c.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon. Salary £100 a year, with board, lodging, and washing. Also Assistant House Surgeon, for six months. Honorarium at the rate of £75 per annum, with board, lodging, and washing.

Births, Marriages, and Deaths.

BIRTHS.

GOLDNEY.—On June 16th, at Richmond, Surrey, the wife of Thos. W. Goldney, M.R.C.S., of a daughter.

PROBYN-WILLIAMS.—On June 16th, at Welbeck-street, Cavendish-square, W., the wife of R. J. Probyn-Williams, M.D., of a son.

RUBEL.—On June 19th, at The Red House, River, near Dover, the wife of John L. Rubel, M.R.C.S., L.R.C.P., of a daughter.

SPRIGGE.—On June 19th, at Essex Villas, Kensington, the wife of S. Squire Sprigge, M.B., B.C. Cantab., of a daughter.

WARRINGTON.—On June 15th, at 69, Rodney-street, the wife of W. B. Warrington, M.D., M.R.C.P. Lond., of a daughter.

MARRIAGES.

BOND—IMMIE.—On June 16th, at Shortlands, Kent, Louisa, only daughter of the late Lancelot Dashwood, of Overstrand, Norfolk, and widow of the late Rev. T. Nairne Imrie, Rector of Holy Trinity, Dunfermline, Fife, to T. Bond, F.R.C.S., Consulting Surgeon to Westminster Hospital.

CORY—REEVE.—On June 12th, at the Parish Church, Tenterden, Charles George Cory, M.R.C.S., L.R.C.P., of Soham, Cambs, to Mabel Emily Hartridge Reeve, only child of the late Walter Reeve, Esq., of Peasmarsh, Sussex.

M'DONNELL—THOMPSON.—On June 15th, W. Campbell M'Donnell, M.R.C.S., L.R.C.P. Lond., 10, Park-lane, Stoke Newington, N., to Grace Thompson, L.O.S., lately of 23, Stoke Newington-road.

ROWLAND—TRUELL.—On June 14th, at the parish church, Wall, Lichfield, Frank Mortimer Rowland, M.D., B.A., of Lichfield, to Cornelia Isabel, second daughter of the Rev. W. H. A. Truell, Vicar of Wall.

STUART—DUTTON.—On June 14th, at St. Bartholomew's, Sydenham, Walter Lea Stuart, M.R.C.S., L.R.C.P. Lond., sixth surviving son of the late J. E. Stuart, of Fairview, Hampstead, to Katharine Eleanor, younger daughter of the late Rev. A. Dutton, formerly Vicar of West Hyde, Rickmansworth, Herts.

WOODHOUSE—NELSON.—On June 13th, at Esher Parish Church, Cecil Woodhouse, M.B., B.C. Cantab., of Homeside, Esher, to Norah Nelson, widow of the late Edward A. Nelson, and only daughter of Grinham Keen, Chadworth Cottage, Esher.

DEATHS.

ARGLES.—On June 14th, at Oxford-terrace, Hyde-park, W., suddenly, Robert Argles, L.R.C.P., aged 60.

BRYANT.—On June 7th, at Bloemfontein, South Africa, Hugh A. Bryant, aged 33, M.R.C.S., L.R.C.P., Civil Surgeon, Royal Army Medical Corps, and late of Shaftesbury.

DAVIES.—On June 15th, at Springfontein, South Africa, Herbert Davies, M.B., Ch.B. Vict., a Surgeon of the Welsh Military Hospital, son of Henry Davies, Carus Lodge, near Lancaster.

EMBLETON.—On June 18th, at Swanage, of apoplexy, Dennis Cawood Embleton, M.D., M.R.C.S., L.R.C.P., of St. Wilfrids, Bournemouth, aged 46.

GILLSON.—On June 2nd, William Edward Gillson, L.R.C.P. Lond., M.R.C.S., of Huntingdon-street, Barnsbury, in his 42nd year.

JONES.—On June 18th, at Springfontein, South Africa, Professor Thomas Jones, F.R.C.S.

JOHNSON.—On June 17th, at Beaconsfield, Bucks, Francis Johnson, M.R.C.S., L.K.Q.C.P.I., aged 50 years.

NEWTON.—On June 20th, at Trevor Dene, Penarth, Georgina, the wife of Charles John Newton, Surgeon, age 43 years.

WHEATLEY.—On the 14th inst. at the Grange, Loughton, William Henry Wheatley, L.D.S. (Lond. and Glasgow), aged 46 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A SEVENTEENTH-CENTURY PHYSICIAN ON THE CONTAGIOUSNESS OF PHTHISIS.

To the Editors of THE LANCET.

SIRS,—I have been surprised to find among the many authors quoted on the subject of the question of the contagiousness of phthisis and its treatment by the open-air method almost no mention of an English physician, Richard Morton, M.D., sometime Fellow of the College of Physicians, who flourished in London at the end of the seventeenth century and a copy of the second English (posthumous) edition, dated 1720, of whose book entitled "Phthisiologia or a Treatise of Consumptions, wherein the Difference, Nature, Causes, Signs, and Cure of all sorts of Consumptions are explained," has been long in my possession. In the preface the Latin edition (1689 quoted in the *British Medical Journal* of June 16th by Dr. Osler) is said to be already scarce and an apology is made for issuing it in the vulgar tongue. In the second book wherein the author treats "of an original consumption of the Lungs," he says that is original "which from the very beginning depends on an ill Disposition and an Exulceration of the Lungs." Among the causes he gives "Sixthly, Also a foggy and thick Air, and that which is filled with the Smoak of Coals, does extremely promote a Consumption ..... by stuffing and weakning the Lungs, that serve for Respiration, which are the Seat and Theatre of this Distemper." "Ninthly, This Disease is also propagated by *Infection*. For this Distemper (as I have observed by frequent Experience) *like a Contagious Fever does infect those that lie with the sick Person with a certain Taint.*" With regard to prevention he remarks: "Let the patient enjoy an open, fresh, kindly Air, and such as is free from the Smoak of Coals which may not only cherish the animal Spirits and comfort the Nervous Parts, and consequently restore the weak appetite, but likewise procure Quiet (at least in some measure) to the Lungs. But" (and I commend this to the *extreme* advocates of the "open-air" system of cure) "there must be great Care taken that he does not get new Cold. For the Body being in such a manner filled with a Load of Humours, every new Catarrh or Cold tends to a Consumption, and from hence come all our Sorrows." In respect of prognosis again Dr. Morton states "a consumption that is *got by Infection* but especially whenever that *Infection* is derived from one that has an acute and malignant consumption is, when all other circumstances are alike, more difficult to cure and for the most part more acute and fatal than other Consumptions." And again: "A Consumption in the Autumn, or Winter, though it may be relieved by a careful Management and the convenient Use of Medicines, yet it can never be perfectly cured without the benefit of the Spring and of the approaching Sun. For as the vesiculous Substance of the Lungs is almost continually penetrated by the Air, and by the Decree of Nature is blown up in the farthest corners of it by the continual succession of new Air, that is driven in and out by Respiration, so the present State of the Air must necessarily be of very great Moment, seeing it may either hinder or promote the cure of this Distemper, as it is found to be wholesomely dry and warm, or unwholesome, by being cold and cloudy. So that the due Constitution of the Air contributes not only to the Preservation of the Lungs when they are out of order, but also to their cure, more than the most pompous Heap of Medicines, which cannot be conveyed into the Blood and the Part affected so continually or in the same quantity as the Air is. And therefore 'tis usually in vain to expect the Cure of a Consumption in the winter time, and in autumn, to wit, while the State of the Air being cold, thick, and moist, and consequently unwholesome, does continually promote the Distemper more than a Store even of the most proper Medicines can stop and check it, when the Edge of the most powerful Remedies is taken off and their Efficacy weakened in this manner by the extremely incommodious State of the Air."

"History 3. Mr. Luff, the son of that Reverend Divine which I have already mentioned, living in Milk-street, after he had married a Virgin that was consumptive (and, as I remember, dyed within a Year after She was married, with an universal Colliquation and the other symptoms of a fatal Consumption of the Lungs) a few Months after her Death fell into a consumption (as I judged) *by Contagion*. To which fatal Disease an Haemoptoe prepared the way with which he was suddenly taken at Exeter, and that in the Winter time, and he lost a great deal of Blood. But as soon as his spitting of blood was stopt by Phlebotomy, a Milk Diet, and Incrassating Medicines and he had recovered his strength in some measure, being dismist by his Country Physician, within a fortnight (which was much sooner than was fit), he came to London on Horseback, and presently sent for me. But alas! how much was he changed from what he was before! I found the poor Patient very Feverish, and always coughing, and extremely wasted with a Colliquation that was now begun, and troubled with a Streightness and Pains in his Breast. I found it to be a mixt Fever, partly Peripneumonick, from a new Inflammation of some of the Tubercles, partly putrid, from the purulency of other Glandules, which had begun so soon to be ulcerated. I judged the Distemper to be a very acute Consumption of the Lungs from a spitting of blood which *as it was contracted by Infection*, as it was rendered

more hasty and violent by his ill Government in his Journey and his return into our Air that is filled with the Smoak of Coals. The violence of the Pain and Fever requiring it, I presently ordered a Vein to be opened, but I took away but a little Blood, because of the Consumption and Colliquation that was upon him. Then I endeavoured at least to stave off this hasty Ruin for some time with temperate Juleps and Opiates and all sorts of convenient Pectoral Medicines, Blisters, and a due management in all things. But all these things were to no purpose; for within three or four weeks he departed this Life, with all the Symptoms of a very acute Consumption of the Lungs."

There can be no more definite statements as to the contagiousness of consumption and the advisability of its open-air treatment than those contained in the above extracts, and I trust, Sirs, that you will, for the credit of English medicine, assist me to restore to his well-deserved niche in the Temple of Fame this ancient worthy. His whole work, although, of course, including much that is archaic, and sometimes even to our ideas offensive, in the way of treatment, teems with useful suggestions and is full of learned observations, the fruit of his close study of older writers, particularly Hippocrates, and of careful clinical and pathological work on his own part.

I am, Sirs, yours faithfully,

WM. J. TOWNSEND BARKER, M.R.C.S. Eng., L.R.C.P. Lond., D.P.H. Cantab., L.S.A.,

Formerly Physicians' Assistant, Bristol General Hospital.

Fulham, S.W., June 18th, 1900.

A MEDICAL TRIBUTE TO GENERAL BADEN-POWELL.

A LEAMINGTON paper publishes some verses written by Mr. Montagu Lomax and headed "To B.-P." We quote a few stanzas.

Oom Paul he spake in council, all his bravest in a ring,
"We have laid our plans of conquest—who will capture Mafeking?"
And the wily Cronje answered, as he stroked his grizzled cheek,
"Just a clump of wooden shanties; I can take it in a week."

* * * * *

And day by day their guns belched forth a storm of shot and shell,
And night by night the peaceful sky was lit with fires of hell;
But you didn't seem to mind it, though *your* guns were only toys,
And you signall'd, "Arn't you coming? You can't frighten us with noise!"

Then they called a solemn conclave, bearded cheek and sullen brow,
And they said, "These *verdomm'd rooibeks* should have given in by now";
And they penned a wrathful missive: "We concede an hour's grace
Surrender at discretion, or we blow you into space!"

But they little knew the spirit of the man to whom they spoke,
With his air of gay *bonhomie*, and his heart of British oak;
"I have mined the chief approaches," so you wrote politely back,
"Towns don't fall by being looked at—won't you try a front attack?"

* * * * *

And week by week, and month by month, the weary siege went on,
And pestilence and famine thinn'd your numbers one by one;
But you only set the tighter, took a hole up in your belt,
And looked for help, so slow to come, across the burning veldt.

But you never failed in courage, never lost your cheery tone,
And when the days were darkest you ran the show alone,
For you plann'd bazaars and concerts, wrote them comic songs to sing,
Then sent out fresh despatches: "All well—at Mafeking."

* * * * *

And when the help, so long delayed, so longed for, came at last,
And the pulses of an Empire's heart were beating loud and fast,
Amid all the songs and tumult that made each bosom swell,
Was the note of deep thanksgiving, "All's well, thank God, all's well!"

* * * * *

There are leagues and leagues of banners, from every roof they wave,
The grand old flag of England you fought so well to save;
And from Sydney to Vancouver the rocking belfries ring
The fame of Baden-Powell and glorious Mafeking.

Leamington Spa, May 21st. MONTAGU LOMAX.

ACCIDENTAL VACCINATION OF A WOMAN BY HER CHILD.

To the Editors of THE LANCET.

SIRS,—The following case is, I think, worthy of notice. Four weeks ago I was sent for to see a woman supposed to be suffering from erysipelas. When I arrived there I found the submaxillary lymphatic glands enlarged and a slight swelling of the left cheek. The lower lip was also swollen and had a large and a small vesicle near the junction of skin and mucous membrane about its centre. About 10 days previously I had vaccinated her child, and I extracted from her the information that the baby had scratched her lip and that she had accidentally rubbed the vaccination pad with some discharge on it on her mouth whilst dressing it. Under the treatment of a mild antiseptic mouth wash, painting the enlarged glands with tincture of iodine, and the administration of an aperient mixture the symptoms subsided, leaving two small cicatrices.

I am, Sirs, yours faithfully,

A. R. HENCHLEY, L.R.C.P., L.R.C.S. Edin.,

Blagdon, near Bristol. L.F.P.S. Glasg.

"DEATHS UNDER CHLOROFORM."

To the Editors of THE LANCET.

SIRS,—The report in THE LANCET of June 9th at page 1666 shows that chloroform administered by the towel or Simpson's method to the same patient and by the same administrator on two occasions, varies absolutely in the result produced—one administration all but kills the patient by respiratory paralysis, the other answers perfectly and everything goes well. Here we have actually demonstrated the uncertainty of the towel or rule-of-thumb method. The cause is evidently the utter uncertainty of the dosage afforded.

I venture to submit that this report of these two administrations justifies another protest against this mode of administration and, indeed, against any mode which does not register the amount of chloroform used and also enable the administrator to know how much chloroform vapour is passing into each inspiration. These essential requisites cannot be claimed for any rule-of-thumb method. This has been clearly shown lately by letters which have appeared, and especially by those of Dr. James Edmunds, in recent numbers of THE LANCET.

I should not presume to engage in the discussion of this question of the administration of chloroform did I not do so from personal experience, and I confess that I have learnt much from this practical method of gaining knowledge and thus putting myself in the place of my patient. In fact, Sirs, I venture to think that all those who administer anæsthetics should have personal knowledge of its effect on themselves, and I have been not a little surprised to hear how learnedly some discourse on the subject without ever having experienced its effects. I have therefore administered it to myself and have had it administered to me by Dr. Edmunds with the Krohne inhaler on the method described by him in THE LANCET.

On each occasion full surgical anæsthesia was gradually and comfortably induced—without an iota of coughing, discomfort, or resistance, and without any after discomfort. On one of these occasions we were honoured by the presence of Dr. Alexander Haig and Dr. Stretch Dowse, and "pipe-smoking anæsthesia" was, I am informed, fully induced, yet the chloroform used from the graduated bottle was only 35 minims and the time of induction was seven minutes.

It would give me great pleasure at any meeting of medical men to submit myself to chloroform again in the same way for the purpose of a demonstration. I think, Sirs, you will agree with me that it is as desirable as it is imperative in the face of so many deaths occurring under chloroform that the important question of the safest mode of administration be at once calmly and quietly considered and discussed, and the best system be recognised and adopted by all anæsthetists. I should consider the sacrifice of my life a small matter to attain this object.

I am, Sirs, yours faithfully,

C. J. HARRIS, M.R.C.S. Eng., &c.

Kilburn Priory, N.W., June 14th, 1900.

Income Tax.—Our correspondent might make a return based on his own estimated income for the ensuing year; but no doubt the surveyor for the district, if the return were lower than that of his predecessor, would assess him on the average of the returns made for the past three years. We should try the first course.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 21st, 1900.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb	Dry Bulb	Remarks at 8.30 A.M.
June 15	29·97	S.W.	0·09	114	70	57	60	63	Cloudy
,, 16	30·05	S.W.	...	110	71	57	60	64	Cloudy
,, 17	30·05	S.W.	...	109	73	61	61	66	Cloudy
,, 18	30·08	S.W.	...	120	76	56	57	63	Fine
,, 19	29·94	S.W.	...	120	77	60	60	66	Fine
,, 20	29·74	S.W.	0·07	121	74	57	58	62	Cloudy
,, 21	29·77	S.W.	0·05	79	61	55	56	61	Raining

During the week marked copies of the following newspapers have been received: *East Daily Press* (*Norwich*), *Leicester Daily Post*, *Daily News*, *Norfolk Weekly Standard*, *Bradford Observer*, *Leeds Mercury*, *Dundee Advertiser*, *East Anglian Daily Times*, *Blackburn Daily Telegraph*, *Ealing Gazette*, *Midland Free Press*, *Bexhill Chronicle*, *Scotsman*, *Birmingham Daily Post*, *Western Mail*, *Gazette* (*Middlesbrough*), *Folkestone Herald*, *Eastern Morning News* (*Hull*), *York Daily Herald*, *Times of India*, *Pioneer Mail*, *Citizen*, *Montrose Standard*, *Sun* (*London*), *South Wales Daily News*, *Manchester Guardian*, *Builder*, *Architect*, *Yorkshire Post*, *Bristol Mercury*, *Hertfordshire Mercury*, *Liverpool Daily Post*, *Mining Journal*, *Brighton Gazette*, *Reading Mercury*, *Bromley Chronicle*, *South-Eastern Gazette*, *West Sussex Gazette*, *Local Government Chronicle*, *Surrey Advertiser*, *Local Government Journal*, *Western Morning News*, *Londonderry Sentinel*, *Carpenter and Builder*, *Notes and Queries*, *Tewkesbury Record*, *West Bromwich News*, *Cambrian News*, *Chicago Daily Tribune*, *South Durham Mercury*, *Weston-super-Mare Gazette*, *Ayrshire Post*, &c., &c.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (25th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M.).

TUESDAY (26th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Royal Ear (3 P.M.).

WEDNESDAY (27th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), Cancer (2 P.M.)

THURSDAY (28th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.) University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), St. Mark's (2 P.M.).

FRIDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M. and 6 P.M.).

SATURDAY (30th).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), London Throat (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (25th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. M. Morris: Consultation. (Skin.)

LONDON THROAT HOSPITAL (204, Gt. Portland-street, W.).—4.30 P.M. Diagnosis and Prognosis in Chronic Deafness. (Post-graduate Course.)

WEST LONDON POST-GRADUATE COURSE (West London Hospital, W.).—5 P.M. Mr. S. Edwards: Urinary Cases.

TUESDAY (26th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON.—5 P.M. Dr. F. W. Mott: The Degeneration of the Neurone. (Croonian Lecture.) Lecture III. Syllabus:—The Chemistry of Degeneration.—The Marchi Method and its Chemical Explanation.—The Decomposition of Myelin in Degeneration.—The Production of Cholin in the Blood and Cerebro-spinal Fluid, especially in Relation to General Paralysis.—The Chemical and Physiological Properties of Cholin.—Degeneration and Auto-intoxication.—The Influence of Nucleo-proteid in the Cerebro-spinal Fluid in Rapid Wasting Diseases of the Brain.—Chronic Toxic Condition of the Blood with especial reference to the Influence of Alcohol and Syphilis in the Production of General Paralysis and Tabes.—Some Facts concerning the Pathology of General Paralysis.—The Close Relationship of the Two Diseases Considered Etiologically and Pathologically.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. Sharkey: Consultation. (Medical.)

WEDNESDAY (27th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—5 P.M. Mr. W. A. Jacobson: Consultation. (Surgical.)

EVELINA HOSPITAL (Southwark-bridge-road, S.E.).—4.30 P.M. Mr. W. Edmunds: Clinical Demonstration of Selected Surgical Cases. (Post-graduate Course.)

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M. Dr. Fowler: Thoracic Aneurysm.

MASON UNIVERSITY COLLEGE, BIRMINGHAM (Medical Lecture Theatre of the College).—4 P.M. Dr. O. J. Kauffmann: The Commoner Neuroses of Childhood, their Pathology and Treatment. (Ingleby Lecture.)

THURSDAY (28th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON.—5 P.M. Dr. F. W. Mott: The Degeneration of the Neurone. (Croonian Lecture.) Lecture IV. Syllabus:—Primary Degeneration.—The Arguments in Favour of General Paralysis being a Primary Degeneration with Secondary Inflammatory Changes.—Primary Degeneration may Affect the Afferent System as in Tabes, the Efferent System as in Amyotrophic Lateral Sclerosis, or both Afferent and Efferent Systems as in Combined Sclerosis.—Observations upon Multiple Polyneuritis due to Alcoholism.—The Effect of Stress in the Production of Degeneration.—The Important Influence of Heredity in Nervous Diseases.—The Influence of Alcohol, Syphilis, and Tuberculosis upon the Germinal Plasm, and the Effects upon the Offspring in the Production of (*a*) Premature Decay of the Neurone, (*b*) Arrest of Development of the Neurone.—Juvenile General Paralysis Studied in 30 Cases.—Congenital Imbecility and Epilepsy from 40 Cases.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Hutchinson: Consultation. (Surgical.)

LONDON SKIN HOSPITAL (40, Fitzroy-square, W.).—4 P.M. Mr. J. Startin: Interesting Clinical Cases (illustrations by lantern slides).

WEST LONDON POST-GRADUATE COURSE (West London Hospital, W.).—5 P.M. Mr. S. Edwards: Urinary Cases.

CHARING-CROSS HOSPITAL.—4 P.M. Dr. W. Hunter: Pathological Demonstration. (Post-graduate Course.)

FRIDAY (29th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. D. Grant: Consultation. (Ear.)

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Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE, OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

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